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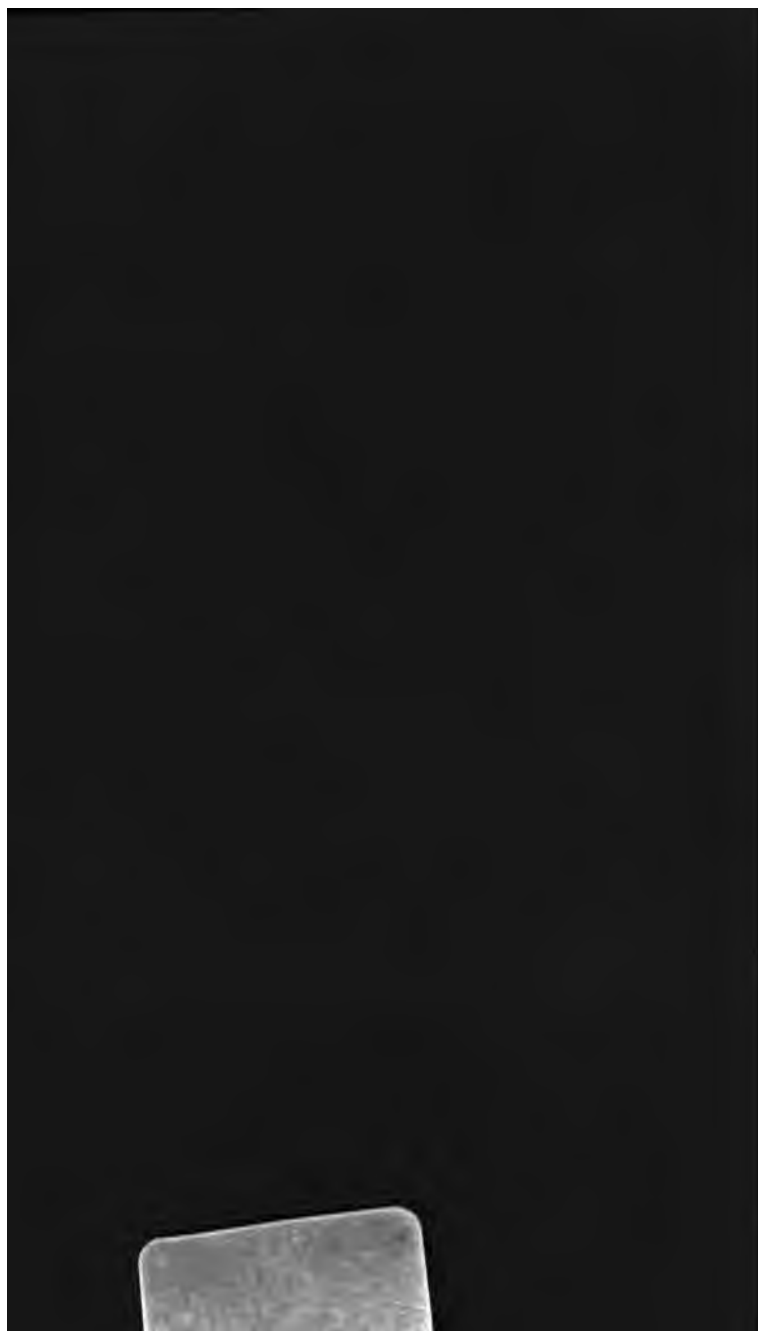
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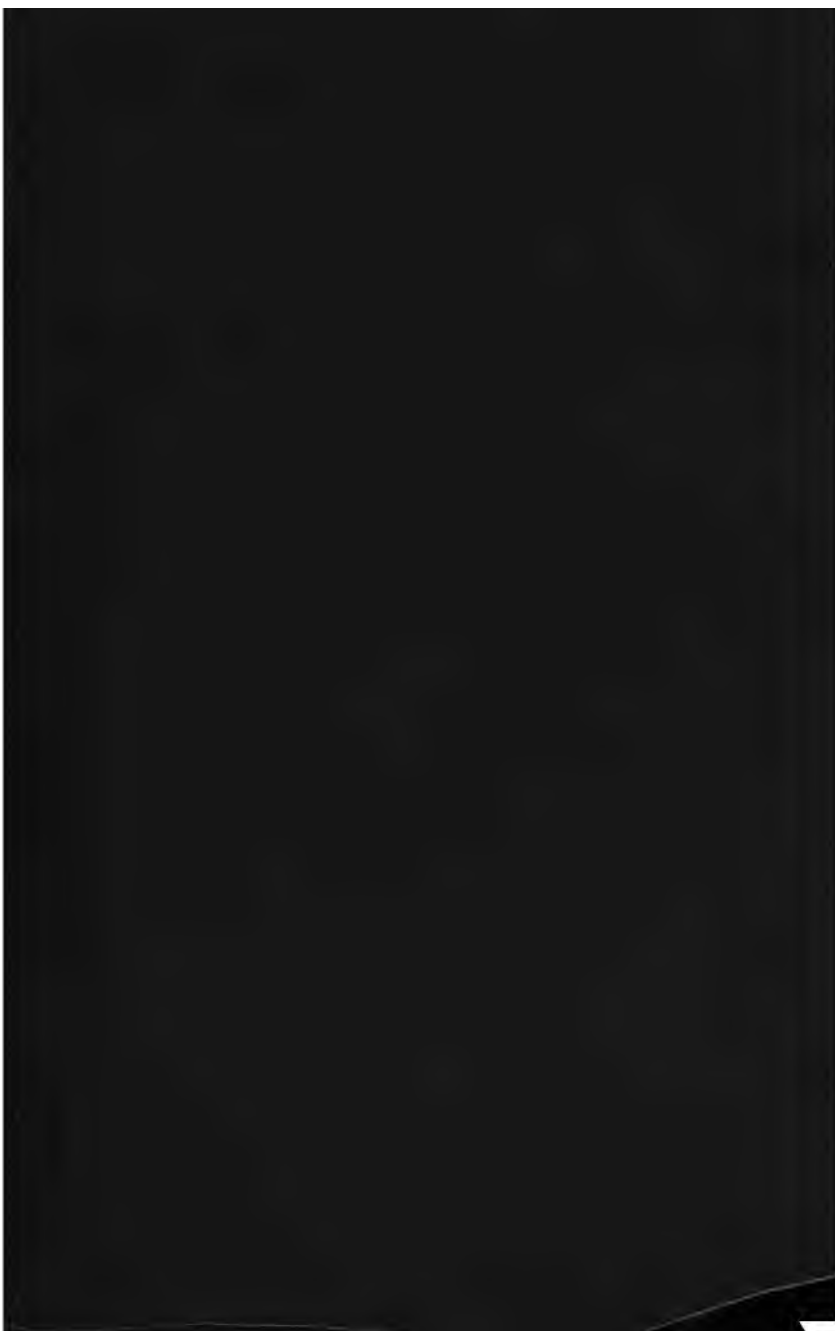


COTTAGE GARDENING

E. HOBBAY









COTTAGE GARDENING.

COTTAGE GARDENING;

OR,

FLOWERS, FRUITS, AND VEGETABLES

FOR SMALL GARDENS

BY

E. HOBDAY.



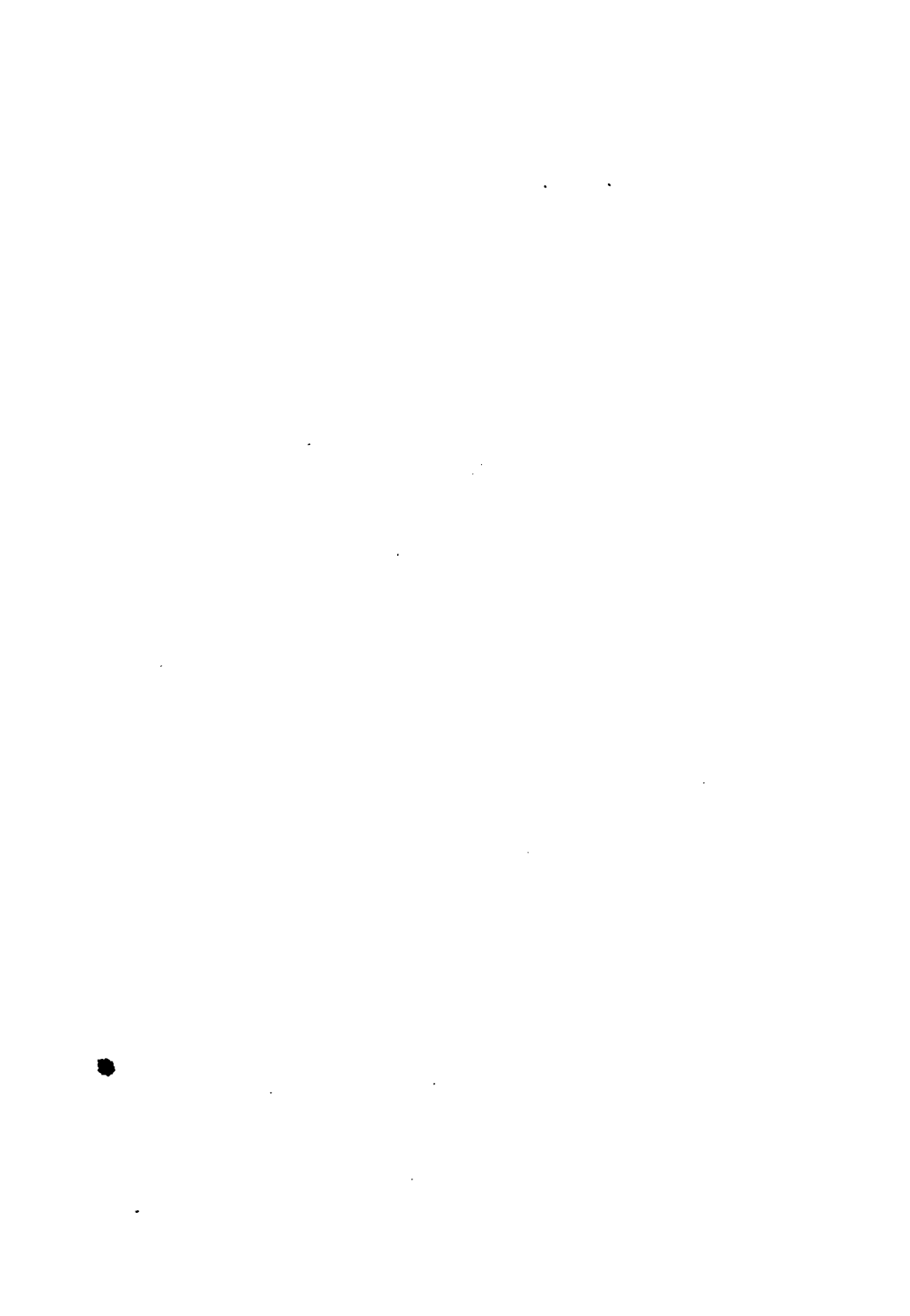
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P R E F A C E .

IN this book it is sought to give concise instructions as to the best modes of cultivating the various products sought for in the smaller class of gardens. The enjoyment to be derived from a garden by no means depends on its size. Many persons find more pleasure in cultivating with their own hands a small garden than can possibly be enjoyed by those who leave their gardens to others. A garden need not be large to afford a great variety of edible products; and, as for flowers, many will probably agree with a saying of the late Mr. Mowbray Morris, long the manager of the "Times" newspaper, that "the best displays of 'bedding-out' in large places did not equal in beauty the simple flowers in a cottage garden." The writer has endeavoured to develop still further this purer taste in the cottage garden; to select among fruits and vegetables the very best and most productive kinds only; and, generally, to bring the information on all the subjects of which the book treats down to the time of issue.



COTTAGE GARDENING.

For the sake of clearness and brevity, it will be convenient to divide my subject into three sections, as follows, viz.:—**Flowers** (including window plants), **Fruits**, and **Vegetables**. In the proper place I shall also refer to the management of the greenhouse and garden frame or pit, as glass in some shape or other is becoming quite common in the better class of cottagers' gardens.

Flowers.

Flowers may not—as an old labourer said to me one day—make the pot boil; but they are, as every one knows, the source of much genuine pleasure. There is an innate love for flowers in the human heart; it is first seen in the little child amongst the Daisies and Buttercups, and even the most callous and indifferent are not insensible to their influences. Those who have it in their power to make presents of flowers, especially among the sick, are not likely to forget the emotion that brightens the eye and flushes the pale cheek of the invalid when receiving a present of flowers. As cottages are not usually situated in a swamp, and from their small size are ordinarily surrounded by a hedge and ditch, artificial drainage, so far as the gardens are concerned, is hardly necessary. There may of course be exceptions to this rule, like all others, and where drainage is really necessary it should be the first thing thought of. I am not in favour of shallow drains where the spade is freely used and where fruit trees and, indeed, trees of any kind, are growing near. The roots of trees have a natural aptitude for running down to the drains for moisture, and in the course of a few years the drains will probably be choked and rendered useless by their fibrous growth. The depth of the drain should never be less than 3 ft., but I should prefer a depth of 4 ft. if a good outfall could be obtained. Fencing and draining, however, are proper matters for the consideration of the owner of the property, and in the majority of instances are carried out at his expense.

In laying out cottage gardens, there is ample room for the display of both taste and judgment. Small cottage gardens should not be unnecessarily cut up with paths, for they take up ground which might otherwise be made use of to great advantage; at the same time, there must be free access for the convenience of cultivation, and one-half the pleasure of a garden is destroyed if a man or his family cannot walk in it in all weathers. Next to a wall a good Whitethorn hedge forms the best boundary fence, and as regards shelter it is even superior to a wall. When the bottom is kept free from weeds, and the top neatly clipped, it gives an air of tidiness to the garden, and is usually indicative of good culture on the part of the occupier.

The cottagers' flower borders are often of a heterogeneous character, some of the plants being dwarf and some tall. Probably the tall plants are growing over the path, quite hiding the dwarfier blooms at the back. My object is to draw the attention of the cottage gardener to such inconsistencies, and to show him the necessity of examining his borders, discovering the worthless subjects that should be eliminated therefrom, and adding to his stock those of a better character. In the first place it should be borne in mind that flowers will not yield their full beauty unless well cared for, and our first, and in fact principal care, must be to thoroughly prepare the site by trenching in manure, and by adding fresh soil. The list of plants given further on will be mostly of a hardy character, and when once properly planted will be better without having their roots disturbed until they get too large for their allotted positions; hence the necessity for well working the land before planting. If the border be more than 4 ft. wide, a few evergreen shrubs of a compact growth, like the Box and Aucuba, may be planted along the back, at intervals of 5 ft. or 6 ft. They give a warm and cheerful appearance in winter when all else is dreary. Some of the different forms of Ivy, planted along the back and trained to stout stakes, form a striking permanent background. When they have attained the requisite height they may be pruned annually in spring, and will form close, dense pillars or pyramids. Ivy is common enough anywhere, and the large-leaved Irish, or even the common Wood Ivy, treated in this way, will add a new and an agreeable feature to cottage gardens that will be especially attractive in winter.

Where the cottage stands back from the public road, the front garden would be the most appropriate place for flowers. In the case of small gardens, they may be confined to

a narrow border on each side of the entrance path, with possibly a narrow border along the front of the house under the windows. The common mode of entrance to such a cottage is to place the gate opposite the front door, and make a straight path up to it. A better way is to place the gate a little to the right or left, and bring the path with an easy curve to the door, thus giving more privacy to the dwelling, especially as this idea can still further be developed in the arrangement of the borders on each side, which can be devoted to ornamental gardening.

As regards edgings to the principal paths, I have seen many things used for the purpose, all more or less suitable. Box looks well when well kept, but it often becomes patchy and in bad condition. A neat, dead edging, such as tiles or bricks of a dark colour, will always have a smart appearance, but they are expensive. One of the neatest and best edgings I have seen for flower borders in cottage gardens for some time came under my notice last spring, and was composed of a thick line of *Arabis albida*. When in flower in spring it looked lovely; it had occupied the same position for several years, and the only trouble taken with it was to cut it well back after flowering. There are many hardy, close-growing plants well adapted for edgings, and involving a very trifling amount of expense or labour. The common House Leek makes a very neat edging, and will grow anywhere, and the trampling of little feet will not kill it. All work of the above-mentioned description should be done in autumn, for spring necessitates so much labour in the vegetable department that if delayed till then it will probably be imperfectly completed, and it is better so to arrange our plans as to avoid undue pressure at any season. Do not plant Hollyhocks, Phloxes, or other tall-growing plants too near each other, or to the front of the border. In arranging the borders the tallest plants should be at the back, and the next highest in succession till the planting is finished off by a dwarf row along the front. All bare spaces can be filled up with neatly staked Sweet Peas in circular patches, Mignonette, and autumn and spring-sown annuals. The main features should be composed of hardy perennial plants, not too thickly planted, thereby leaving room for a few Stocks, Asters, and other annuals to give fragrance and beauty during the autumn months, when some of the permanent occupants will have ceased flowering for the season. If there be space for a narrow border under the windows of the cottage, dwarf plants only should be planted, so as not to obstruct the light. Sweet-scented flowers

might be largely used. A few dwarf Roses, Stocks, Mignonette, Violets, Musk, and two or three Clove Carnations will, in combination with the Honeysuckle over the porch, make the cottager's garden a very fairyland on summer evenings; and no matter how small the space of course there must be a few bulbs, for no garden is complete without a few Snowdrops and Crocuses; and, above all, neatness should reign supreme, especially in the case of the flower borders near the cottage door. A few minutes once a week with the hoe will suffice to keep the soil in a healthy condition and destroy the weeds when small. The whole surface should also be frequently hoed over in dry weather about 1 in. deep, not a patch here and there, and then watering, even in the hottest weather, will be rarely required. All flowers that require staking should be attended to before they are blown over by the wind; and do not tie them all in a bundle, like a faggot, but place the stake a little distance to the rear of the plant, and draw the shoots up one by one and secure them loosely to the stake. It does not add to the health or appearance of a plant if it be tied too closely to its support; on the contrary, a slight waving with the motion of the air is natural and beneficial. In the case of some strong-growing species the shoots should be thinned out when only a few inches high; by so doing, the flowers will be finer, and they will last longer in beauty.

I have written thus far in the hope of helping the humblest class of cottagers in the management of their flower borders; but, as I have previously remarked, there are degrees in cottage gardens and gardeners. The proprietor of a two-light frame is on a higher level in horticulture than the man who has all his plants exposed, whilst the happy owner of a greenhouse, if only 8 ft. square, need never be at a loss for healthy and interesting employment. The possessors of those valuable adjuncts to good gardening, a greenhouse and a frame, often aim at too much, and frequently by overcrowding defeat the object they have in view. The cottager often aspires to have a real flower garden laid out in geometrical form, either on Grass or gravel beneath his windows. Bright-coloured flowers always look best on green turf, and since the introduction of small-sized mowing machines, small Grass plots can easily be kept in good trim; but small Grass plots, unless the work be well done at first, are often unsatisfactory from their settling unequally. Before the turf is laid, it is almost impossible to make the ground too firm, either by treading, or, what is still better, have the whole surface rammed

down thoroughly, especially if any of the surface has been recently stirred to any depth. Any one who lays down a geometrical flower garden, if it only contain four small beds, should endeavour to have it exact as to both level and outline. I have often been asked the question—What is the best way of planting a small flower garden of three or four beds? My answer has always been, Let every one please himself, and take into consideration his own means and taste. Why should one person go to the expense of providing fresh plants for his flower garden annually because his neighbour chooses to do so? Much of the enjoyment of a garden is lost unless one can plant the flowers one loves best in it; for example, let the man who is enthusiastic about the queen of flowers fill his garden full of Roses, not tall, gawky standards, but dwarfs on their own roots, or budded low down on the Brier or Manetti. They need not be all on a dead level; there might be pillars and pyramids of General Jacqueminot and other vigorous growers. Arches and bowers may also be covered with the rampant growers that will fill the air with fragrance, and if the enthusiastic amateur learn the simple arts of budding and making cuttings—both of which subjects will be referred to subsequently—he may indulge his hobby at a less expense than the bedding-out system would entail. My advice to amateurs and small occupiers is, If a man have a preference for any particular class of plants, let him indulge that preference by filling his garden with the flowers of his choice. I know it is said that a man with a special hobby is a bore (which remark may certainly apply in some relations of life), but it is not so in gardening. One may have his Rosery, another his Fernery, a third his Alpine garden, whilst a fourth may be an enthusiast in bulbous-rooted plants, and may desire to surround his dwelling with collections full of interest and beauty, from the humble Snowdrop to the gorgeous Tulip and the stately Lily. Others, again, may take delight in stateliness of form, and striking effects may be produced by hardy plants of commanding aspect. The Globe Artichoke, the large-leaved Rhubarbs, the Yuccas, Bamboos, the Pampas Grass, the Hollyhocks, the double Sunflowers, and a host of others, are fitted to adorn the dell or to clothe the sloping bank. But in the formation of their flower-beds let one and all eschew stars, diamonds, and all fancy patterns. A plain circle or oval or an irregularly-shaped bed with easy-flowing lines, would present a far better appearance than a flower-bed in the shape of which sharp angles

prevail. If treated in this way, small gardens would possess more originality, be more interesting, and afford more room for novelty in arrangement. I know amateurs with small gardens who regularly every spring buy the same number of Scarlet Pelargoniums and Yellow Calceolarias to plant in their borders, and—unless a revolution or an earthquake takes place—will probably continue to do so to the end of their lives; and this not because they like these two plants better than all others, for they can thoroughly appreciate other species when they see them, but they hardly know how to make a change, and they are under the spell of that fashion that compels the multitude to follow in the footsteps of the few. I have previously urged that each should, in the matter of gardening, consult his own taste and wishes alone, but I should like to qualify it with a caution, viz., that in laying out or altering small gardens, there is a certain fitness of things in connection therewith that should never be lost sight of. One place, from the character of its soil and situation, may be naturally well adapted for one class of plants, but to fit it for something quite different, may involve a vast amount of labour and expense; for instance, it is of no use to plant Roses on a dry sandy bank, as that would only end in failure; but, with a slight alteration of the surface a very pretty Alpine garden might be made, such plants as Yuccas, *Abies clanbrasiliana*, the common dark-leaved Savin, the prostrate Juniper, St. John's Wort, Cotoneaster, and Vinca, being set to clothe the prominent points; whilst Sedums, Saxifrages, and a host of similar plants would be at home on the lower slopes. Suitable spots, also, could be found for Cyclamens, Primulas, &c.; and if a few large stones could be obtained and bedded in the hill-side, an attractive mound of hardy rock plants will be formed that would cost much less than forming a mockery of a terrace, with a few miniature beds laid out on it. I have known instances in which a round sum of money has been spent to perch a modern flower garden on the side of a cliff, in the natural home of Ferns and creepers, which latter would have made the place permanently beautiful at a very trifling cost.

Shrubs for Small Gardens.

From their many shades of colour and shapes of growth and foliage, shrubs are at all seasons as beautiful and interesting as flowers; and it must not be forgotten that many shrubs bear very beautiful flowers in addition to beautiful foliage.

In almost every garden there is room for improvement in the character of the shrubberies. There is too much sameness, too little variety; everything is reduced to one dead level; group after group is composed of the same materials of the commonest description. In more than one nursery during the last year or two I have seen the quarters filled to repletion with the best kinds of evergreens and flowering shrubs, and but a limited demand for them, whilst the demand for common Laurel, common Yews, Lilacs, &c., could not be met. In the annexed list I have omitted Laurels, for although they are beautiful evergreens that will grow in any soil and situation, they are not so well adapted for such places where it is sought to obtain the best effect in a limited space.

Shrubs suitable for Small Gardens.

<i>Acer Negundo</i> variegatum	<i>Cotoneaster</i> <i>Simmonsii</i>	<i>Osmanthus</i> <i>ilicifolius</i> variegatus
<i>Aucuba japonica</i>	<i>Cupressus</i> <i>Lawsoniana</i>	<i>Pæonia</i> <i>Moutan</i> <i>Banksii</i>
" <i>mascula</i> <i>viridis</i>	<i>Deutzia</i> <i>gracilis</i>	<i>Phillyrea</i> <i>cordata</i>
<i>Althæa</i> <i>frutex</i>	" <i>glabra</i>	<i>Pyrus</i> <i>japonica</i>
<i>Aralia japonica</i>	<i>Escallonia</i> <i>macrantha</i>	<i>Retinospora</i> <i>ericoides</i>
<i>Arbor-vitæ</i> , Chinese	<i>Euonymus</i> <i>japonicus</i> variegatus	" <i>filifera</i>
" Siberian	<i>Forsythia</i> <i>viridissima</i>	" <i>pisifera</i>
" golden	<i>Genista</i> <i>præcox</i>	" <i>aurea</i>
<i>Arbutus</i> <i>Unedo</i>	<i>Ivy</i> , various	<i>Rhus</i> <i>glabra</i> <i>laciniata</i>
<i>Berberis</i> <i>Aquifolium</i>	<i>Holly</i> , various	<i>Ribes</i> <i>aureum</i>
" <i>Darwini</i>	<i>Juniperus</i> <i>stricta</i>	" <i>sanguineum</i>
" <i>japonica</i>	" <i>sabina</i>	<i>Spiræa</i> <i>arinifolia</i>
<i>Box</i> , various	" <i>prostrata</i>	" <i>Lindleyana</i>
<i>Broom</i> , yellow & white	<i>Kerria</i> <i>japonica</i>	<i>Tamarisk</i>
<i>Buddleia</i> <i>globosa</i>	<i>Laurustinus</i>	<i>Taxus</i> <i>baccata</i> <i>aurea</i>
<i>Catalpa</i> <i>syriacifolia</i>	<i>Ligustrum</i> <i>aureum</i> variegatum	<i>Thujopsis</i> <i>dolabrata</i> variegata
<i>Cornus</i> <i>mascula</i> variegata	<i>Lilac</i> , Persian	<i>Venetian</i> <i>Sumach</i>
<i>Cotoneaster</i> <i>microphylla</i>	<i>Magnolia</i> <i>conspicua</i>	
	" <i>purpurea</i>	

Where space permits there are many beautiful kinds of weeping trees, such as *Sophora japonica pendula*, &c.; and where trees of larger growth are admissible, the Weeping Lime is a fine tree for landscape effect, and one of the most delightful trees to shade a garden seat. Among the large family of Conifers, too, selections might be made of the most beautiful and interesting character.

Hardy Plants suitable for Small Gardens.

	Colour.	Usual Height. Feet.
<i>Anemone japonica</i>	rose	2 to 3
" <i>Honorine Joubert</i>	white	
<i>Aster Reevesi</i>	white and yellow	1
" <i>pyrenæus</i>	blue and yellow	2 to 3
<i>Alyssum saxatile</i>	yellow	1
<i>Anchusa italica</i>	blue	2 to 3
<i>Aquilegia glandulosa</i>	blue and white	1
" <i>cœrulea</i>	blue	
<i>Campanula persicifolia</i>	blue and white	1 to 3
<i>Coreopsis lanceolata</i>	yellow	1 to 3
<i>Corydalis lutea</i>	yellow	1 to 1½
<i>Doronicum caucasicum</i>	yellow	1
<i>Geranium sanguineum</i>	crimson-purple	1 to 2
<i>Helianthus rigidus</i>	yellow	3 to 4
<i>Aubrietia purpurea</i>	purple	½
<i>Delphinium formosum</i>	blue	3
<i>Helleborus niger</i>	white	½ to 1
<i>Iris germanica</i> , and others	violet	2 to 3
<i>Lupinus polyphyllus</i>	bluish-purple	2 to 4
<i>Polygonatum multiflorum</i>	white	2
<i>Pœonia officinalis</i> , and others	crimson	1 to 3
<i>Pyrethrums</i> double, various	various	1 to 2
<i>Phlox</i> (<i>decussata</i> section best)	various	2 to 3
Hollyhocks	various	6 to 8
<i>Vicia argentea</i>	white and purple	1
<i>Yucca filamentosa</i>	white	3 to 5
" <i>gloriosa</i>	white	3 to 6
<i>Zauschneria californica</i>	vermilion	1
<i>Fuchsias</i> — <i>coccinea</i> , <i>gracilis</i> , and others	various	4 to 8
<i>Dielytra spectabilis</i>	rose	2
<i>Lilium candidum</i>	white	3 to 5
" <i>tigrinum</i>	orange-scarlet	
<i>Tritoma Uvaria</i>	orange and red	4 to 6
<i>Lychnis chalcedonica</i>	scarlet	2 to 3
<i>Antirrhinums</i> , various, from seed	various	1
Clove Carnation	white and crimson	
<i>Chrysanthemums</i> , various	various	2 to 3
<i>Pentstemons</i> , various	various	1 to 2
<i>Hepaticas</i> , various		
<i>Primulas</i> , single and double		
<i>Polyanthus</i> , gold-faced, from seed		
Alpine Auriculas		
Sweet Williams		
Wallflowers		
Daisies		

I have purposely kept this list as short and select as possible, as long lists of names only tend to confuse those who are not

well acquainted with plants. When once a beginning is made and knowledge is gained, there is a very wide field open for the enthusiast in such matters. The approximate heights and colours are given to assist the inexperienced planter in arranging his borders.

Plants for a Rockery.

<i>Alyssum saxatile</i>	<i>Genista prostrata</i>	<i>Saxifraga umbrosa</i> va-
<i>Arabis albida</i>	<i>Helianthemum</i> , in var.	riegata
" " <i>variegata</i>	<i>Hypericum humifusum</i>	<i>Saxifraga cristata</i>
" <i>purpurea</i>	<i>Iberis sempervirens</i>	<i>Sedum Kewi</i>
<i>Aubrietia purpurea</i>	<i>Lithospermum prostratum</i>	" <i>reflexum</i>
" " <i>va-</i>	<i>Lysimachia nummularia</i>	" <i>carneum variegatum</i>
" <i>riegata</i>	<i>Saponaria ocyroides</i>	" <i>Sieboldi</i>
<i>Bambusa Fortunei</i> <i>variegata</i>	<i>Plumbago larpendula</i>	" <i>glaucum</i>
<i>Campanula fragilis</i>	<i>Thymus lanuginosus</i>	<i>Phlox procumbens</i>
" <i>gurganica</i>	" <i>Serpyllum</i>	" <i>subulata</i>
" <i>carpatia</i>	<i>Saxifraga biflora</i>	" <i>Nelsoni</i>
<i>Cerastium tomentosum</i>	" <i>ceratophylla</i>	<i>Polemonium coruleum</i> <i>variegatum</i>
<i>Clematis Jackmanni</i>	" <i>lypnoides</i>	<i>Spiraea Filipendula</i>
" <i>lanuginosa</i> ,	" <i>oppositifolia</i>	<i>plena</i>
" <i>pallida</i> , and others	" <i>sarmentosa</i>	<i>Festuca glauca</i>
<i>Dianthus deltoides</i>	" <i>granulata</i>	<i>Veronica spicata</i>
<i>Dryas octopetala</i>	" <i>plena</i>	<i>Vinca major</i>
<i>Erica carnea</i>	<i>Saxifraga umbrosa</i> <i>major</i>	" <i>minor</i>
<i>Convolvulus mauritanicus</i>		" <i>elegantissima</i>

Many of the plants in the above list—indeed, most of them will make capital plants for the front of a mixed border. When allowed to spread out a foot or so in diameter they are far more effective at all seasons than when small patches are planted thickly; in fact, their true character can scarcely be seen unless they have room for development. Herbaceous borders or beds of Alpine plants should never be dug with the spade; a small fork or, in some instances, a trowel, will be the best implement to use amongst choice plants, many of which do not flower well until thoroughly established.

Hardy Plants with Fine Foliage or Habit.

<i>Acanthus spinosus</i>	<i>Cannas</i> , various	<i>Gynierium argenteum</i>
<i>Aralia odalis</i>	<i>Carex pendula</i>	<i>Gunnera scabra</i>
<i>Astilbe rivularis</i>	<i>Centaurea babylonica</i>	<i>Horacleum pubescens</i>
<i>Arundo donax</i>	<i>Crambe cordifolia</i>	<i>Panicum bulbosum</i>
<i>Bambusa aurea</i>	<i>Cynara Scolymus</i>	<i>Phytolacca decandra</i>
" <i>falcata</i>	<i>Elymus arenaria</i>	<i>Polygonum cuspidatum</i>
" <i>japonica</i>	<i>Erianthus Ravenne</i>	<i>Rhubarbs</i> , various
<i>Bocconia cordata</i>	<i>Ferula communis</i>	<i>Yuccas</i> , in variety

Striking effects may be easily produced by a judicious grouping of the above, allowing single specimens of such kinds as *Arundo conspicua*, *Yuccas*, and others of majestic or stately growth, to stand out on the turf or to fill in the salient points of the picture. Some pains should be taken to give them a good start by properly preparing the site by trenching and manuring, for plants with large spreading foliage require a good deal of support.

Hardy Bulbs, &c., for Small Gardens.

Most people who grow bulbs in their gardens confine themselves to *Hyacinths*, *Crocuses*, *Tulips*, *Daffodils*, *Gladiolus*, *Winter Aconites*, and *Snowdrops*, but even in small gardens room may be found for some of the following:—

<i>Acis autumnalis</i>	<i>Gladiolus</i> in variety	<i>Narcissus incomparabilis</i>
<i>Agapanthus umbellatus</i>	<i>Hyacinthus amethystinus</i>	<i>Narcissus Jonquilla</i>
<i>Allium ciliatum</i>	<i>Hyacinthus orientalis</i>	„ <i>juncifolius</i>
„ <i>Moly</i>	<i>Iris flavescens</i>	„ <i>maximus</i>
„ <i>neapolitanum</i>	„ <i>florentina</i>	„ <i>minor</i>
<i>Amaryllis Belladonna</i>	„ <i>germanica</i>	„ <i>odorus</i>
<i>Arum Dracunculus</i>	„ <i>pallida</i>	„ <i>poeticus</i>
„ <i>italicum</i>	„ <i>pumila</i>	„ <i>tenuior</i>
<i>Brodiaea coccinea</i>	„ <i>reticulata</i>	„ <i>triandrus</i>
„ <i>congesta</i>	„ <i>sambucina</i>	<i>Ornithogalum nutans</i>
„ <i>grandiflora</i>	„ <i>Susiana</i>	„ <i>pyramidale</i>
<i>Bulbocodium vernum</i>	„ <i>xiphioides</i>	<i>Pancratium illyricum</i>
<i>Calla palustris</i>	„ <i>Xiphium</i>	<i>Scilla amona</i>
<i>Camassia esculenta</i>	<i>Leucojum aestivum</i>	„ <i>bifolia</i>
<i>Colchicum</i> , all the kinds	„ <i>vernum</i>	„ <i>campanulata</i>
<i>Crinum capense</i>	<i>Lilium auratum</i>	„ <i>nutans</i>
<i>Crocus Aucheri</i>	„ <i>bulbiferum</i>	„ <i>patula</i>
„ <i>biflorus</i>	„ <i>canadense</i>	„ <i>peruviana</i>
„ <i>Imperati</i>	„ <i>candidum</i>	„ <i>sibirica</i>
„ <i>luteus</i>	„ <i>chalcedonicum</i>	<i>Serapias Lingua</i>
„ <i>nudiflorus</i>	„ <i>croceum</i>	<i>Sparaxis pulcherrima</i>
„ <i>reticulatus</i>	„ <i>eximium</i>	<i>Sternbergia lutea</i>
„ <i>Sieberi</i>	„ <i>japonicum</i>	<i>Tigridia Pavonia</i>
„ <i>speciosus</i>	„ <i>longiflorum</i>	<i>Trillium grandiflorum</i>
„ <i>vernus</i>	„ <i>speciosum</i>	<i>Triteleia uniflora</i>
„ <i>versicolor</i>	„ <i>tigrinum</i>	<i>Tritoma Burchelli</i>
<i>Cyrtipedium spectabile</i>	„ <i>venustum</i>	„ <i>præcox</i>
<i>Erythronium americanum</i>	„ <i>Washingtonianum</i>	„ <i>Uvaria</i>
<i>Erythronium Dens-canis</i>	<i>Muscari botryoides</i>	<i>Tulipa Celsiana</i>
<i>Fritillaria imperialis</i>	„ <i>comosum mon-strosum</i>	„ <i>Clusiana</i>
„ <i>Meleagris</i>	<i>Narcissus bicolor</i>	„ <i>cornuta</i>
<i>Galanthus nivalis</i>	„ <i>Bulbocodium</i>	„ <i>Gesneriana</i>
„ <i>plicatus</i>		„ <i>Oculus-solis</i>

Roses for small Gardens.

Baron Prévost	General Jacqueminot	Mrs. Rivers
Baroness Rothschild	John Hopper	Paul Neron
Beauty of Waltham	Jules Margottin	Prince Camillo do
Charles Lefebvre	Louise Dargans	Rohan
Comtesse d'Oxford	Madame Charles Gra-	Victor Verdier
" de Chabril-	pelet	Xavier Olibo
land	Maréchal Vaillant	Souvenir de la Mal-
Duc de Rohan	Marie Baumann	maison
Dupuy Jamin	Marquise de Castellano	Madame Moreau

Tea Roses.

Cheshunt Hybrid	Madame Bravy	Safrano
Devoniensis	Madame Falcot	Souvenir d'un Ami
Gloire de Dijon	Maréchal Niel	
Goubault	Moiret	

Noisette Roses.

Aimée Vibert	Cloth of Gold	Solfaterra
Celine Forestier	Jaune Despres	Triomphe de Rennes

Climbing Roses.

Dundas Rambler	Félicité perpetué	Aimée Vibert
Hanksian, white	Anna Alexieff	Maréchal Niel
" yellow	General Jacqueminot	Gloire de Dijon
Boursault, common	Madame Domage	
China, common	Mrs. Rivers	

Window Gardening.

It has often been remarked that the gardening which is carried on under the greatest drawbacks often yields the greatest enjoyment. There is a feeling of satisfaction engendered by having surmounted difficulties that at first sight appeared insuperable. An active-minded man must have something to occupy his leisure time, and there is nothing gives so much real pleasure as the culture of flowers; the very care and thought that are necessary for success add a charm of their own, and increase the interest which one feels in their success. It has been said, "Give a man secure possession of a barren rock, and he will turn it into a garden," and this apothegm gives a very good illustration of what labour is capable of accomplishing when there is a prospect of its obtaining its reward. The return that is made in health and happiness has as certain a monetary value as if the cash actually found its way into the

pocket. The large relative proportion of their incomes that many working men spend on their own enjoyment, and in which their families have no share, might be usefully turned into some other channel if they could be persuaded to look for amusement in some occupation in which the whole family might join. It is possible for those who have only a back-yard of limited dimensions, or even only the window-sills, to achieve horticultural triumphs of a very gratifying nature. The only really necessary qualification for a beginner to possess is perseverance; failures must be looked for as a matter of course, no one being exempt from them; but if rightly and earnestly considered, failures are our best teachers. Of course I am not now alluding to those disastrous failures, the natural consequences of neglect, but those only of a less serious character, which may be attributed to the improperly carrying out of some detail. It is usually the attention to small matters that makes the difference between success and failure. The person of small means and less experience who may set about turning his back-yard into a garden, had better not aim at too much at first. Success is more likely to be obtained by concentrating one's efforts upon a few subjects, and those of comparatively easy cultivation at the beginning. Perhaps one of the greatest inconveniences the small cultivator labours under in large towns is the difficulty of procuring suitable soil. And although plants derive a good deal of their sustenance from water and air, still it is also important that the roots should be placed in a good healthy soil. Road-scrapings, containing a small proportion of the droppings of animals, can generally be obtained in most places, and this with a few nodules of partially decayed turf, and any thoroughly decayed vegetable matter such as leaf-mould, will grow most plants that are desirable for a cottage with no greenhouse; and failing this, most florists sell suitable composts for a small sum per peck or bushel.

For spring or summer display in the back-yard or on the window-sill outside, boxes are preferable to pots, from the fact that the plants in them require less attention in hot weather, and wood being a non-conductor, the points of the roots are less liable to be scorched by the heat of the sun than if the pots are fully exposed. In growing plants in pots, some of the mistakes most commonly made by the inexperienced are potting too loosely, filling the pots too full with soil, and making inadequate, or perhaps no provision for drainage. Moderately firm potting is conducive to free and continuous blooming, even in the case of soft-wooded plants, whilst for hard-wooded

plants it is indispensable; and there must be sufficient space left at the top of the pot, otherwise there will be a difficulty in giving the plants enough water, besides the extra trouble caused by washing the soil over the tops of the pots. A clear space of from $\frac{1}{2}$ in. to $\frac{3}{4}$ in. will generally be sufficient for all sizes up to and including 6-in. pots. With boxes this rule need not be so strictly enforced, as the soil will be less liable to wash over. I have seen very good displays produced in back-yards and windows in towns, by using old raisin and soap boxes. With a few holes bored through the bottom to allow the surplus water to pass through freely, and a coat of green or stone-coloured paint, they present a decent appearance, and with care will last some years; and as regards the well-being of the plants, they will be as efficient as the most costly-constructed boxes. But whether boxes or pots be used, thorough drainage is most important. Broken crocks in three sizes can be easily and quickly obtained; one large crock should be placed over the hole, then a layer slightly smaller, and afterwards a handful of small pieces about the size of a Hazel Nut on the top, the whole being about $1\frac{1}{2}$ in. thick, according to the size of the pot. Charcoal, small coke, and clean gravel may also be used in cases of emergency. A little clean Moss, or a thin layer of the roughest bits of soil, may be placed over the drainage to keep it open. Amateurs, as a rule, are rather too fond of potting in finely-sifted soil, forgetting that sifting takes out all the fibre which it is so desirable both from the mechanical office it performs in keeping the soil open, and from its gradual decay supplying the plants with food. Where soil can be made fine enough by crumbling it in the hands, it is better than sifting it; of course in the case of cuttings or very small plants, it may be found advisable to sift the soil.

Watering.

To know how and when to water plants in pots can only really be acquired by experience. There are so many varying circumstances in connection therewith, such as the state of the atmosphere, the condition of the plants (whether recently potted or with the pots full of roots), and a host of local conditions that have a more or less direct or indirect bearing upon it, that a correct estimate can only be formed on the spot. More errors are committed by overwatering than by keeping the plants too dry. When a plant requires water it

makes known its wants in an easily understood language, by the shrinking and drooping of its leaves; and although the signs of constant repletion—sickly, unhealthy foliage—are none the less surely given, the evidence is delayed until the mischief is in many cases irreparable. From May to September the plants should be watered in the evening, and at other seasons of the year at an early period of the day. If a plant requires water, sufficient should be given to thoroughly moisten the whole soil; to water in dribbles only on the surface will most surely lead to difficulties, all the more mischievous in their consequences from their tendency to deceive. Soft water, somewhat near the temperature of the air, is the best for all plants, but where hard water only can be had, either a portion should be boiled and mixed with the remainder, or the whole should be placed in the open air twenty-four hours before it is applied. Some of my acquaintances attribute their success in the culture of window plants to their constant habit of giving their plants cold tea—probably boiled water would be quite as effective.

To know when a plant is dry at the roots, rap the pot sharply with the knuckles; if the sound emitted be sharp and hollow, the plant probably requires watering; if the sound be dull and heavy, it may be assumed that it does not lack moisture. This test, however, cannot always be relied upon, for the sound varies in some measure according to whether the plant has been potted firmly or loosely. A more reliable test is to take the plant up in the hand, and its weight will be a pretty good guide as to its condition; but when once experience has been gained, if the same person always attends to the watering, it is rarely that a mistake is made. The time that has elapsed since the last watering, the condition of the atmosphere, and other matters that only come under his observation, will lead him, as it were, by instinct, to water at the right time, and to give the necessary quantity.

In outside window gardening, if I may so term it, there is abundant room for more variety than at present; many plants not commonly met with in such positions might be advantageously used. Bright and continuous effects may be produced by annuals alone if sown at different times and brought forward in boxes successionally. Ivy and other creepers might be planted along the front of the boxes, and allowed to hang down naturally over the side, or they may be planted at the ends and trained upwards. Virginian Creepers, again, are exceedingly useful for this purpose. The Canary Creeper and other Tro-

paölums would be quite at home in boxes outside the windows, provided the soil were rich, and water was liberally supplied. There are, in fact, so many things that may be successfully grown outside windows in boxes that one wonders that so little variety is seen. In order to keep a window gay and interesting I should suggest that several sets of boxes about 5 in. or 6 in. deep, be prepared, using the deepest ones for the summer-blooming plants. The year might be commenced with a box filled with Sedums, not necessarily all of one kind. There might be a mixture with the long shoots falling over the sides of the box gracefully on all sides; with the Sedums might be associated, in early spring, Crocuses and Snowdrops planted in October. Hyacinths and Tulips might also be intermingled, and there would be no occasion to re-plant the boxes every year. What a sensation would be created by a box brimfull of common Yellow Primrose early in spring, or the common Wild Hyacinth or Bluebell! Many a dweller in large towns, who was country-born, would be enraptured by the sight of the flowers of their childhood. Polyanthuses and Alpine Auriculas from seed would also be very effective, and could be obtained at a very small cost and trouble; in succession might follow autumn-sown annuals of many bright and beautiful kinds. In summer Pelargoniums, Stocks, Mignonette, &c., would look gay and give off a delightful perfume; and when the autumn and winter came round there would be dwarf Chrysanthemums, single Russian Violets, and dwarf Shrubs, including berry-bearing species. If some pains be taken with the Violets to get plants started early, they will begin flowering in autumn, and continue to bloom through the winter. There are numbers of plants that would be as effective as those I have named, or even more so, but I hope I have already said enough to show that the materials for beautifying the humblest home are neither scanty nor costly, and that the care and attention necessary to their successful development will open up new sources of thought and supply a pure source of enjoyment, all the more gratifying because untainted by selfishness. If the outside of the window may be described as the poor man's flower garden, the inside may, by a similar figure of speech, be called his hothouse; or he may have his aquarium, furnished with gold fish, and, to keep the water pure, a few aquatic plants.

As regards plants in rooms, boxes are hardly so suitable as pots, but the pots if desired may be plunged in an ornamental box and covered in with green Moss, which will impart a better

effect than when the staring red pots are visible. Pots 6 in. in size will be found large enough for most subjects, and some would require pots of less size. For various reasons it is a bad practice to use pots a second time till they have been well cleaned out. All potting should as far as possible be done by the beginning of August. It gives time for the plant to get well established before the short days of winter. If the importance of this were more generally recognised, there would be fewer deaths among window plants in winter. Late potting, accompanied perhaps by a too free use of the watering-pot, causes soft, sappy growth at a time when maturation should be the first consideration. As a rule, when the days shorten less water will be required, but even then, whenever it is necessary to water at all, enough should be given to moisten all the soil, only it will be required much less frequently. These strictures upon late potting do not refer to bulbs. September is time enough for Hyacinths, Tulips, Crocuses, &c., as their natural period of growth is in the winter. Plant culture in rooms requires constant watchfulness; cleanliness is as important for the health of plants as for human beings. If the leaves be coated with dust, or the young growths infested with green fly, it is a sure sign of neglect on the part of the cultivator; the sponge should be used as often as convenient to remove dust from the leaves, and advantage should be taken of every warm shower to place the plants outside for a few hours. If a strict watch be kept the green fly, when it makes its appearance, may be easily kept down by picking them off without resorting to other remedial measures, which are all more or less troublesome to apply. The object should be to keep the plants clean and healthy, and by giving plenty of ventilation on all favourable occasions to make the growth hardy and strong. The ventilation of rooms where plants are growing is well worth some study, especially as I believe the more perfectly that is done the better will be not only the health of the plants, but also of the human occupants. In cold weather ventilate, if at all, only at the top of the window. Never allow a cold, keen blast from the east or north to blow through them, chilling their sap and almost shrivelling up their foliage. Be particular to open the windows early in the morning when the weather is favourable; and, on warm sunny days, especially in early spring, a free ventilation will be beneficial to give colour and strength to the young growth. In spite of all the care taken to insure strong, healthy growth,

should insects attack them in large numbers, they must be destroyed, or they will ruin all hopes of obtaining good blooms. This may be effected either by fumigation or by washing with an insecticide. A friend of mine, whose windows were the admiration of all who saw them, made a wire frame and covered it with oiled calico, and whenever he saw any flies on his plants he moved them to the back kitchen table, placed his calico cover over them, and introduced a small iron plate on which a red-hot coal or two had been placed, with sufficient Tobacco placed on the coals to fill the calico cover with smoke, which very effectually destroyed the insects; the Tobacco, however, must never be allowed to flare or blaze, or the tender foliage of some plants will suffer. A very useful dip may be made by dissolving 2 oz. of soft soap in a gallon of soft water; then place 1 oz. of Tobacco in a basin or other vessel and pour over it 1 quart of boiling water; when the strength has been extracted from the Tobacco, the liquid may be passed through a strainer and mixed with the soap and water. The plants should be taken one at a time and their heads dipped in the mixture, taking care that none of it gets into the pots. After dipping lay them on their sides for a few minutes, and before the solution dries on them rinse them in clean water. Either of these methods will effectually destroy the insects without injuring the plants; but, as I have previously stated, never allow the plants to suffer from want of water; pay special attention to ventilation, taking advantage of warm showers to place them outside for an hour or two, and keep a watchful eye for the appearance of the first fly.

Rooms in which gas is burned, unless great care be paid to ventilation, are not suitable for plants in blossom. Succulents may succeed; but flowering plants should be removed to another room when the gas is lighted.

Plants Suitable for Outside Window Gardening.

<i>Arabis alba</i>	<i>Iberis corifolia</i>	Phloxes, dwarf
Alpine Auriculas	<i>Lithospermum prostratum</i>	Pansies, various
<i>Astilbe japonica</i>	<i>Linaria cymbalaria</i>	<i>Sibthorpia europæa</i>
Aubrietias, various	<i>Lysimachia nummularia</i>	Sedums, many kinds
<i>Choiranthus Marshalli</i>	Musk	Saxifrages
<i>Chrysanthemums</i>	<i>Mentha argentea variegata</i>	<i>Sempervivums</i>
<i>Calystegia pubescens</i>	Primulas, various	<i>Thymus aureus marginatus</i>
Campanulas, various	Polyanthus	<i>Vinca elegantissima</i>
<i>Cerastium tomentosum</i>		Violets
Daisies, various		Veronicas, various
Hepaticas, various		

Annuals for Windows.

Nemophila insignis	Limnanthes Douglasi	Stocks
Euphorbia calabrica	Myosotis dissitiflora	Asters
Silene compacta	Mignonette	Collinsia bicolor

Shrubs for Window Gardening.

Aucuba japonica	Cotoneaster micro-	Jasminum nudiflorum
" " mascula	phylla	" officinale
viridis	Dentzia gracilis	Virginian Creeper
" " vera	Erica carnea	Clematis, various
femina	Helianthemums, various	Laurustinus
Euonymus, various	Hydrangea hortensis,	Acer Negundo var-
Box, various	and others	gatum
Berberis Aquifolium	Ivy, various	Yucca filamentosa

Plants for Suspending in Baskets.

Calystegia, various	Lophospermum scan-	Tropæolums, various
Cobæa scandens	dens	Vincas
Convolvulus mauri-	Lysimachia nummu-	Campanula garganica,
tanicus	laria	and others
Pelargonium, Ivy-	Lycopodium denti-	Sedum carneum var-
leaved, various	culatum	gatum, and others
Linaria Cymbalaria	Saxifraga sarmentosa	Cereus flagelliformis
Lithospermum pro-	Nierembergia gracilis	Isolepis gracilis
stratum	Tradescantia zebrina	

Summer Creepers for training outside.

Canary Creeper, and	Lophospermum scan-	Cobæa scandens
other Tropæolums	dens	Maurandia Barclayana

Plants for Pot Culture in Rooms.

Aloes, various	Cytisus racemosus	Mignonette
Astilbe japonica	Cactus, various	Mesembryanthemums
Cyclamen persicum—	Hydrangeas	Roses
hybrids	Fuchsias	Pelargoniums, various,
Calceolarias	Lobelias	not forgetting the
Cinerarias	Lily of the Valley	old sweet-scented
Campanulas	Musk	kinds
Chrysanthemums	Myrtles	Petunias

Ferns for Shady Windows.

Aspidium exaltatum	Pteris cretica albo-	Cyrtomium falcatum
Pteris serrulata	lineata	Phlebodium aureum
" tremula	Asplenium flaccidum	

many other kinds may be added, such as

<i>Lastrea Filix-mas cristata</i> and others	<i>Polystichum</i> , various	<i>Lycopodium Wildenowii</i> " apodum
<i>Asplenium Adiantum nigrum</i> and others	<i>Polypodium</i> , various	
	<i>Lycopodium denticulatum</i>	

Bulbs.

<i>Snowdrops</i>	<i>Narcissus</i>	<i>Scillas</i>
<i>Crocuses</i>	<i>Anemones</i>	<i>Sternbergia lutea</i>
<i>Hyacinths</i>	<i>Ranunculus</i>	

Hints on Propagation for Cottage Gardeners.

BUDDING ROSES. — The stocks should be planted in the autumn for budding the following summer. The Manetti is the best stock for light soils, and the Brier for heavy ones. Wherever the Brier grows luxuriantly in the hedgerows, in that neighbourhood it may be planted with safety; the stocks may be raised from cuttings, or in the case of the Brier, from seed also. Plenty of seedling Briars may be obtained from the hedge-rows, and if planted early in autumn, will be available for budding as dwarfs the following summer. Manetti stocks are very easily raised from cuttings, about 8 in. or 10 in. long, planted firmly in rows 1 ft. apart, leaving two eyes out of the ground. At the end of the first year they should be lifted, the upper roots cut off, the branches trimmed in and planted 1 ft. apart in the rows and 3 ft. between the rows. The object of trimming off the upper roots is to permit the stock to be planted further out of the ground, and to put the bud in low down on the stock, so as to produce neat and compact plants. Great care should be taken in cutting out all buds from the bottom portion of both stocks and cuttings, to prevent suckers forming underground. In the summer of the second year from the cutting they are usually strong enough for budding. In the case of dwarf Roses the buds should be inserted close to the ground, and if a little of the soil round the collar be removed with a pointed stick or some small instrument, the bark thus uncovered will, in dry seasons, work with greater freedom. Budding is a very simple operation, and a few minutes' practical instruction will give more information than can be imparted by a whole chapter of description; but for the benefit of those who cannot readily obtain a practical lesson I will endeavour to describe the operation as plainly as possible. There are two modes of budding:—the old plan is to make a horizontal cut just through the bark

as low down the stem as possible, and from that a downward cut at right angles about 2 in. long (thus, T), just large enough to insert the bud, care being taken not to cut too deeply, only just dividing the bark. The cambium or inner bark should not be disturbed in the operation. The other plan is simply to make a cut downwards, carefully raising the bark, and sliding the bud under. There is less mutilation in the latter plan, and the union is generally complete. It involves a little more trouble till one gets expert, and, perhaps for budding on the ground, the amateur will adopt the old-fashioned plan. The best time for budding Roses on the Brier is when the Roses are in the full flush of their first bloom. A certain amount of discrimination is necessary in selecting the buds so as just to have them at the right stage. As a rule it may be taken that when the thorns will rub off easily the buds will be in the requisite condition, and the bark will work freely and easily. Some people attach importance to taking buds only from flowering shoots, but I have taken buds wherever I could get them without finding any material difference to ensue. In theory it promises well, but in some places the difficulty is to infuse vigour into the plants; when that is done there is no difficulty in producing bloom. In cutting out the buds take the shoot in the left hand, remove the leaves, but not the leaf-stalks, then holding the knife, which I need hardly say should be as sharp as a razor, in a slanting direction, cut about half an inch below the bud, pass the knife up the shoot, and come out about half-an-inch above the bud, taking off the bud and a thin slice of wood with it, which can be afterwards removed by inserting the point of the knife at the lower end, and pressing it with some force against the end of the thumb. If the eye of the bud come out with the wood, the bud is useless. There is no advantage in having the shield of the buds very large, as they are more difficult to manipulate, and will require a larger incision to be made in the stock. As fast as the buds are inserted they should be tied closely down either with soft matting or worsted yarn, so that the air may not enter. Buds that remain dormant till the following spring usually make the strongest plants, therefore the stocks should not be cut in or headed down till the following March. In the course of a month or so after budding they should be looked over, and the ties loosened to allow room for the buds to swell. Standard Roses should be budded in the same way, only of course the buds should be inserted in the young wood of the same season's growth, close down to the base of the shoot, in order to form

compact heads. One advantage the *Manetti* has is that it can usually be worked late in the season, and the plants make splendid heads in one year. Roses can also be grafted both on the stems and the roots; but as I consider budding to be the best plan for the small cultivator to adopt, I shall confine my remarks to that alone.

ROSES FROM CUTTINGS.—The least troublesome method of striking Rose cuttings is to take off the cuttings about the first or second week in October, and not later. Select only strong, well-ripened wood, and make the cuttings from 6 in. to 8 in. long, making a clean cut just beneath a joint to form the base of the cutting. Plant them in rows in an open situation, leaving about two buds exposed, the remainder to be buried in the soil and made firm. Mulch with some non-conducting material such as sawdust, old tan, cocoa fibre, or any similar material. I have tried cuttings both in a north and also in a south aspect, but there is no better plan than placing them in some open situation, and mulching to maintain an even temperature and regular state of moisture in the soil.

Tip Propagate Hardy Herbaceous Plants.

This may be readily accomplished either by division of the roots in autumn or spring; by cuttings put in on a shady border in summer; or in some instances, by seeds sown in autumn or spring. Cuttings of the young shoots will root readily about June and July in a cool shady border. It is best to prepare a small bed by adding sand, road-scrappings, and leaf-mould, as the cuttings can be put in when convenient. Pansies, Pinks, Carnations, Phloxes, Pentstemons, and all hardy plants can be propagated in such a bed. A few pliable sticks can be hooped over the cuttings, and a mat or some protecting covering placed over on bright, sunny days. The cuttings may be from 2 in. to 4 in. long, according to what kinds they consist of, and should be cut across just under a joint with a sharp knife; if the knife be not sharp the tissues, instead of being smoothly cut, will be bruised and so damaged as to stop all circulation, and the cutting will probably damp off and decay instead of forming roots. Unless the leaves are large and flaccid it is not advisable to remove more than the bottom pair, so as to give room to insert the cutting, for the leaves have a most important function to perform, and the more leaves a cutting carries, always provided they can be preserved from flagging, the sooner roots will be formed. Of course if a

hand-light or a close frame be at hand to keep a close atmosphere round the cuttings, their rooting will be more expeditiously and certainly accomplished.

Sowing Flower Seeds.

Most hardy annuals, biennials, and perennials, will do better if sown in August than if the sowing be delayed till spring. Not only is it the most natural time for sowing, but the land is usually warmer and the seeds lie a shorter time in the ground before germinating, and they consequently produce a stronger and healthier plant, and they are less liable to be eaten off by insects; and, lastly, much time is gained, for, instead of sowing the seeds in March, you have young hardy plants ready to put out. Seeds of hardy biennials and perennials are best sown in well-drained ground, arranged in 4 ft. beds, with a track or alley 1 ft. wide between them, for the convenience of weeding, thinning, and lifting the plants. The soil should be in a well-pulverized condition, and if too dry should be well soaked with water twelve hours before sowing. They may either be sown broadcast, or in shallow drills across the beds; the latter plan is the best, because it gives facilities for stirring the soil between the rows of young plants. The drills can be made by pressing a 4 ft. rod or straight edge into the soil the required depth, according to the size of the seeds; half-an-inch will be deep enough for all small seeds, and when the seeds are sown thinly in the drills, cover lightly with finely sifted soil. If the weather be hot and dry, shade by laying mats, or similar coverings, on the ground. If the patches be small, Rhubarb leaves will answer the purpose very well, and they are usually at hand; they must, however, be removed as soon as the young plants appear. When annuals are sown in the spring in the borders where they are intended to remain, they are usually sown too thickly, and the thinning delayed too long, consequently they never attain their proper development—the flowers are poor, the growth weak, and the whole plant short-lived. This is the main cause why annuals are in many places so unpopular. If sown on good land, and such plants as *Nemophilas*, *Saponarias*, &c., thinned out, so that every plant has not less than half a square foot for growth, they would present a much more satisfactory appearance than they usually do.

The Greenhouse.

In the erection of a greenhouse and its interior arrangements, the purpose for which it is required should be fully considered beforehand. The span-roofed form is the best for plant culture, as it admits plenty of light on all sides; but where there is already a suitable wall in existence, a lean-to of the same size could be built cheaper, and in the winter less fuel would be required to keep out frost. If merely required as a hibernatory for bedding plants, no fire-heat will be required beyond what would be necessary to keep out frost; and for a small house that only requires a brisk fire occasionally, a brick flue will answer the purpose, as it heats quickly, and from its greater body of material does not cool so rapidly as hot-water pipes after the fire is out.

The main features in the successful management of bedding plants are—(1) Put the cuttings in early; Pelargoniums in the open air fully exposed, and whether in pots or boxes they should be allowed room enough to form sturdy growth. Verbenas and similar plants will root better and more quickly in a frame or pit where they can be kept close during the day, but a little air should be given for two or three hours early in the morning to drive out damp. (2) Early in October when the plants are removed to their winter quarters, all pots should be washed; and promptitude at all times is necessary in the removal of dead or decaying leaves, without waiting for a general clearing up, as they not only look untidy, but all decaying substances encourage damp to settle round the plants, which in the short days is often more fatal than cold. (3) Water sparingly and with care—by this I do not mean that only a small quantity at a time should be given, for plants at all times when dry should have sufficient to moisten all the soil, but do not give water till they are dry, applying it in the mornings of fine days as far as possible, so that any damp may dry up before night. (4) Ventilate abundantly on all favourable opportunities; this is a principal point. When not absolutely freezing, or the wind so strong as to blow the pots off the shelves, the lights should be opened early in the morning and not closed till night, except in rainy weather. (5) Use as little fire-heat as possible, consistently with keeping the thermometer in the house from falling below

the freezing point ; but it may occasionally be necessary during a long period of dull, damp weather, to light the fire in the morning for an hour or two to expel damp. The chief errors in the management of bedding plants are too much artificial heat and too little ventilation. Every one who grows bedding plants in sufficient number to require a house for their keeping through the winter will be sure to have a small hot-bed at work in March for striking cuttings and raising tender annuals—*Verbenas*, *Ageratums*, *Heliotropes*, and most of the bedding plants commonly employed will strike in a hot-bed in spring, and make far better plants than those struck in autumn. In March a few seeds of *Celosias*, *Balsams*, or other tender annuals, may be sown and placed in the hot-bed ; cuttings also of *Zonal Pelargoniums*, *Fuchsias*, and double *Petunias* will root quickly there, and speedily produce small-flowering plants. Thus a quantity of useful specimen plants may be grown on for furnishing the greenhouse in summer, and for vases in the house.

One of the greatest evils in connection with the introduction of the modern bedding system into small gardens is the fact of its not only having banished from the borders many of the best hardy plants, but it has also gradually but surely taken possession of the greenhouse or other glass structures, to the entire exclusion of every other plant of any value. I willingly grant that the bedding system, when kept within reasonable limits, has a very brilliant effect in summer ; but where it once obtains a footing, it has a tendency to monopolise, not only all the borders in the garden, but every bit of space under glass as well, and to crowd out every plant that will not submit to the same treatment that bedding plants require.

So far as the culture of plants is concerned, it is not the most interesting way of furnishing a greenhouse ; and all who love plants and flowers for their own sakes must grow weary of a system that crowds the work of twelve months into the enjoyment of three, and leaves a dreary blank at the end, with every inch of space in the greenhouse occupied with cuttings for the next year's campaign, instead of being furnished with plants to brighten up the rooms in winter. It is a relief to turn from the greenhouse I have just endeavoured to describe to the house of an amateur not yet famed for his beds of *Pelargoniums* and other plants in summer. There you will always find something to interest and instruct ; he has one continual round of floral beauty. In addition to *Primulas*, *Cinerarias*, *Calceolarias*, *Pelargoniums*, *Fuchsias*, &c., which follow each other in succession, there are *Camellias*, *Azaleas*,

Lilies, and others too numerous to mention now, some of which have very pleasing associations connected with them. Bulbs and Lilies of the Valley will of course be a rare treat in early spring before vegetation commences in the open air; but where the greenhouse is kept solely for the culture of greenhouse plants, the most interesting way of arranging the interior is to remove all the stages and have the floor of the house arranged in beds, with the paths so laid out as to make the most of the surface. If the house be lofty the beds in some instances might be raised and surrounded with a rockwork edging covered with *Lycopodium*, *Sedums*, *Linaria*, &c. In the beds, the soil of which should be specially prepared, might be planted *Camellias*, *Daphnes*, *Luculias*, *Acacias*, and a host of other subjects, both flowering and with ornamental foliage, so selected and arranged as to have always one or more specimens in flower. Plants so treated would have an admirable appearance, and they would not require one-tenth part of the labour that plants demand when grown exclusively in pots. The back wall could be clothed with creeping plants or covered with virgin cork, a quantity of pockets being left for *Ferns*, &c. Another mode of covering the back wall would be to plant all the numerous varieties of Ivy-leaf *Pelargoniums* on it, and train each kind up separately, giving each a certain amount of space. This would at all times be a most interesting feature. One or two Tea-scented *Roses* must assuredly find a place, either on the roof or trained up a pillar. *Maréchal Niel*, planted either in the front, or at one end, would ramble over the roof. I find that when close to the glass in a house where it has plenty of ventilation it keeps on flowering at intervals as new growth is made all summer. Both the white and red varieties of the *Lapageria* would do well planted in a good bed of peat well drained; when established they would ascend into the roof and form festoons, and the flowers would be lovely for cutting. How beautiful would some of the old-fashioned Sweet-scented *Pelargoniums* be to train up a pillar or over an arch, while their leaves would be delightful for mixing with cut flowers! The *Heliotrope* too, should find a place, for when planted out under glass, it assumes the growth and appearance of a shrub, nearly always in flower. A *Tacsonia* or *Passion-flower* might be trained over the roof in summer, but it would require watching and thinning occasionally; otherwise it might shade too much, and it should be spurred in early in autumn. *Fuchsias* and many other things might be planted, with a certainty of their thriving if there were sufficient space, but to crowd the

plants would not only be unsatisfactory, but in the end be disastrous. Baskets of creeping plants might be suspended from the roof; in short, such a house would be a delightful retreat at any time, and from the plants being all, or nearly all, planted out, there would be less work and less anxiety attending their successful development. Where there is a pit as well as a greenhouse, many things, such as bulbs, autumn-sown annuals, &c., might be brought on till the flowers were nearly opening, and then introduced and grouped about wherever space could be found, and colour was desirable. For a house of this kind containing valuable plants, an efficient heating apparatus would be indispensable, and there is nothing so reliable as hot water where heat is required pretty regularly during the winter months. There are many forms of boilers, all more or less efficient, but what I think is more especially required for small houses is a good gas-heating apparatus. Stocking is always dirty work, and if deputed to any one not thoroughly interested in the work, it is very apt to be ill done, and then a good deal of waste is incurred; but if the gas could be lighted when necessary much time would be saved, and the work cleanly done, with less temptation to neglect it. In the list I give below it is not desirable that all should be planted out. Biennials, such as *Primulas*, *Cinerarias*, *Calceolarias*, &c., will do better in pots, and kept in a cool frame during the summer and autumn. The same remark also applies to *Cyclamens*, *Chrysanthemums*, and *Heaths*. I should recommend the main features only to be permanent, as the other groups could be changed occasionally for variety's sake.

List of Greenhouse Plants.

<i>Azaleas</i> , various	<i>Cheiranthus odoratis-</i>	<i>Dracæna indivisa</i>
<i>Abutilon</i> Boule de	simus (night-scented	<i>Echeveria</i> , various
Neige	Stock) [num	<i>Epæris</i>
<i>Abutilon</i> Thompsoni	<i>Chorozema varium</i> na-	<i>Epiphyllum</i> "
<i>Acacia ornata</i>	" Lawrenciana	<i>Erica Wilmoreana</i>
" Drummondii	<i>Chrysanthemums</i>	" <i>hyemalis</i>
" <i>grandis</i>	<i>Cineraria</i> (seeds sown	" <i>candidissima</i>
<i>Adenandra fragrans</i>	in March and May)	" <i>gracilis vernalis</i>
<i>Agapanthus umbellatus</i>	<i>Cannas</i> , various	" <i>Cavendishi</i>
<i>Bouvardia</i> , various	<i>Citrus</i> (Oranges), vari-	" <i>ventricosa grandiflora</i>
<i>Brugmansia sanguinea</i>	ous	
<i>Calceolarias</i> , from seed	<i>Cyclamen persicum</i> (hy-	<i>Eriostemon buxifolium</i>
sown in July or	brids)	<i>Ficus elastica</i>
August	<i>Cytisus Everestianus</i>	<i>Fuchsias</i> , various
<i>Camellias</i> , various	" <i>racemosus</i>	<i>Habrothamnus elegans</i>
<i>Chamærops excelsa</i>	<i>Daphne indica alba</i>	<i>Heliotropes</i>

List of Greenhouse Plants continued.

Hydrangeas	Primula sinensis, from	Witsenia corymbosa
Kaloesanthes	seeds in March and	Yucca aloifolia varie-
Mignonette	April	gata
Myrtles	Polygala cordata	CLIMBERS.
Nerium (Oleander),	" Dalmatiana	Jasminum grandiflorum
various	Richardia uthiopica	Lapageria rosea
Pelargoniums, many	Solanum pseudo-capai-	alba
kinds, including Cape,	cum and others	Passiflora Colvilli and
Zonal, Ivy-leaf, &c.	Tree Carnations	others
Petunias, double	Vallota purpurea	Rhynchospermum jas-
Pimelea Hendersoni	Veronica Blue Gem	minoides
" hispidia	" Gloire de	Tacsonia insignis
Plumbago capensis	" Lorraine	

Ferns for Greenhouse Culture.

Adiantum cuneatum	Asplenium marinum	Doodia aspera
" assimile	Alsophila australis,	Hypolepis repens
" pubescens	a tree Fern	Lygodium scandens,
" Capillus Vo-	Cyrtomium falcatum	climbing Fern
neris	" Fortunei	Pteris tremula
" formosum	Cheilanthes farinosa	" scaberula
" setulosum	Cynthea denbata, tree	" serrulata
" trapeziforme	Davallia canariensis	" cretica albo-
" reniforme	" elegans	lineata
Asplenium dimorphum	" Nova-Zelandia	Platyceerium aleicorne
" flaccidum	Dicksonia antarctica,	Platyloma falcata
" Veitchianum	tree	Woodwardia radicans

If the planting-out system be adopted, the soil in the beds or borders should be about 2 ft. thick, resting on a bed of stones or brick-bats from 9 in. to 12 in. thick for drainage; the most suitable compost is turfy loam and peat in about equal portions, chopped up with the spade, and every bit of stick or root that is likely to produce fungus picked out. A few lumps of sandstone, a few barrowfuls of broken charcoal, and a few bushels of soot might be added—the two former to keep the soil open, and the latter to enrich it and stimulate the growth of the plants. The soil should be made thoroughly firm before planting, and filled well up, for when the fibre in the borders decays, the borders will go down; and if Camellias and similar plants be planted, it will be dangerous to make up the border by adding soil to the top. Hard-wooded plants will turn sickly and die if their collars be buried too deeply.

Fruit Culture.

THIS is a matter in which the whole nation is interested as consumers, if not as cultivators. Some have an idea that beyond a few Gooseberry or Currant bushes it is absurd for a cottager to attempt to grow fruit, but I fail to see why every man who has ground enough to plant half-a-dozen Apple trees should not do so; in fact, I should like to see every cottage gardener turn his attention more than is now done to fruit culture, not only to supply the wants of his family, but also where favourably situated for the purpose of adding to his income. There is hardly a cottage that has not bare spaces on its walls, which might be turned to profitable account in this way. The best aspects would suit Apricots, Peaches, and Grapes, the inferior ones Plums and Pears, whilst the north sides would produce Morello Cherries that would find a ready sale at remunerative prices, and the Morello Cherry rarely fails, even in the most unfavourable seasons, to produce a crop. It should be borne in mind that the walls of a cottage are warmer and better adapted for fruit culture than an unprotected garden wall. If all the bare places on cottage walls, in suitable situations, were clothed with fruit trees, the value of the produce in a few years would be something enormous. There is nothing chimerical in this: in some districts many cottagers do sell considerable quantities of fruit from their gardens, and there is no reason why every cottager, who has a good garden, should not do so if well and perseveringly attended to; but there is one great drawback to men of slender means planting fruit trees. The moment a tree is planted the planter, if an ordinary tenant, loses all right of property in it. It is not like a crop that can be planted and gathered in one or even two years; you must wait a long time before fruit trees become profitable, and then perhaps some other person may step in and reap the benefit. Some owners of cottage property do, I know, supply their tenants with young fruit trees when applied for, and much, very much more might be done in this direction. If fruit trees require to be systematically grown, it must be done with the assistance of the landlord in the first instance, and even in that case the benefit would not be all on the side of the tenant. A garden well laid out, and planted with suit-

able fruit trees, will always command a higher rent than one without them. The landlord, too, could do this better than the tenant, even if the latter were able and willing to do it, as he would most likely be in a position to obtain the best information as to the most suitable varieties to plant in that particular district. No doubt our climate is a difficult one, but even in the worst seasons some trees will produce and ripen a crop.

The Apple.

Apart from the incongruity of their appearance, tall standard trees are not the most profitable for planting in small gardens. The main objections to them are:—They shade injuriously a very large space; if the situation be at all exposed, a quantity of the fruit is blown down by the wind before it is fit to gather; and, lastly, the length of time before the trees come into bearing. There may be positions where a few tall trees may be advantageously planted; against such I have no objections to urge, but to their general adoption to the exclusion of other forms, I take exception. The espalier form of training is, in my opinion, especially adapted for small gardens; it seems to me to possess all the advantages of both dwarf trees and tall standards without any of their disadvantages. The fruit grown on trees trained as espaliers is always of superior quality; they occupy, in comparison with other forms, but little space; they may be cropped down to the ground, and they may at the same time ascend any reasonable height into the air; the wind does not injuriously affect them either by blowing down the fruit or bruising it by friction against each other; and by comparison with other trees, if well managed, their shade is not so injurious to other crops growing near them. I should, therefore, strongly advise the espalier system for the growth of Apple trees, not to the utter displacement of either the dwarf or standard form (for I believe there are places where each and all may be planted), but I have a firm conviction that the main reliance for a good crop of Apples should be placed upon trees trained in the espalier form. In the first place, the horizontal mode of training is the best as regards Apples and Pears, for repressing undue vigour, and producing early fruitfulness, as early at least as is consistent with the quick furnishing of the wires. No great amount of skill is necessary to master the details of culture, as they consist principally in tying the main shoots to the wires, and summer pinching or pruning. Supposing that maiden trees be planted in autumn, which is the best time

for planting, about 14 ft. or 15 ft. apart is a good distance for most kinds on the Crab stock on a fair Apple-growing soil; the espalier wires should be 5 ft., but not more than 6 ft. high. The young trees should be cut back in the spring to within an inch or so of the bottom wire, which may be about 6 in. or 8 in. from the ground. At the point where headed down three of the best placed shoots should be selected for training, one on each side to occupy the bottom wires, and the other as the main leader trained perpendicularly; all other growths to be pinched back to three or four leaves. During the summer the young shoots must be tied in as they progress towards their full length; at the winter pruning the main or perpendicular leader must be cut back to the second wire, and in the spring another pair of branches will have started on the second wire, when the main leader should be taken up perpendicularly as before. This process must be repeated annually until all the wires are furnished, and will enable the bottom of the tree to get a good start in advance of the top. Were it otherwise, from the tendency of the sap to flow upwards, there would be a difficulty in furnishing the bottom wires well with fruit. If the espaliers be 5 ft. high, and the individual wires 9 in. apart, there would be room for seven branches on each side, which would give plenty of room for the development and growth of the fruit.

PLANTING.—Apples will thrive well on any good loamy soil on a bottom either naturally dry (that is, with no stagnant water in it) or artificially drained; on a bad sub-soil, whether hungry gravel or cold clay, the bottom of the hole should be made impervious to the roots before planting, and the trees planted upon a slight mound. Where the soil is suitable, all the preparation required is to trench it up 2 ft. deep, and thoroughly break it up and intermix it. Manures, if applied at all, are better given in the shape of top-dressings when the trees come into bearing, so as to keep the roots near the surface. Where the sub-soil is unfavourable some expedient should be adopted to keep the roots out of it, either by spreading a barrowful of concrete over the bottom of the hole, 1 ft. 8 in. or 2 ft. from the surface, or paving the bottom with bricks or tiles, in order to give the roots a horizontal direction. All trenching should be done in September if possible, so as to give time for the ground to settle before planting. If at all loose the bottom of the hole should be well trodden just previously to the tree being planted. All fruit trees succeed best in a firm soil; and all planting should be completed by the end

of November. Mulch with short litter or manure for 2 ft. or so round the bole of the tree as soon as the planting is finished. By early autumn-planting much time is gained, and the trees are in a good condition for heading down as soon as the sap begins to move in spring. If the planting be delayed till February or March, it would be better to leave the tops uncut till the following winter, especially if the roots have been mutilated in lifting them. Much care and judgment will be necessary in the selection of the trees, for it is preferable to plant half-a-dozen trees of a kind known to thrive well in the neighbourhood than to plant a number of sorts about the suitability of which for the soil little or nothing is known. This, of course, needs not preclude any one from trying a new sort occasionally; and as it is important for the trees to be true to name, select them from some respectable nursery in preference to buying them in a market.

DWARF APPLES.—Where the expense of espaliers would be too great, or where it is desirable, from the shallow, unsatisfactory nature of the soil, to plant dwarf trees grafted on a surface-rooting stock, such as is now commonly used by many of our principal nurserymen, the ground and the hole should be prepared in the same way as just recommended for espaliers; and if a barrowful or so of better soil could be added in which to plant each tree, it would be found of great advantage for giving them a start. As regards the distance to plant them apart, something would depend upon the kind of training adopted. A simple and good mode of training is to drive in three stout stakes at equal distances round each tree and $1\frac{1}{2}$ ft. from it, leaving the tops of the stakes, when firmly driven into the ground, about level with the part of the trunk of the tree whence the branches spring. An iron wire ring or hoop should then be fastened by small staples to the tops of the stakes; the trees should be headed back so as to get a sufficient number of shoots to break away to form the outer tier of branches. About eight or nine will suffice, and the shoots must be trained out horizontally at equal distances, when young, as far as the iron ring, and then trained up vertically. Always, in pruning trees that are not sufficiently furnished with branches, cut to a bud pointing in the direction to which the future branch is required to grow. This mode of training makes dwarf handsome trees that will bear well, and if a bit of land could be devoted to the culture of dwarf Apples on the Paradise stock, or Pears on the Quince stock, a most interesting and profitable plantation would be established. A piece

of land 20 ft. square will, at 5 ft. apart, hold sixteen trees ; and if not more than four or five of the most suitable kinds be planted, the chances of success will be greater than if any attempt be made at forming a collection. But do not dig amongst them with the spade, for it ruins trees grafted on a surface-rooting stock. The hoe should be freely used, and the spaces between the trees pointed over with a fork in February after the requisite winter pruning has been completed.

SUMMER PRUNING.—In the case of espaliers, or indeed any other trained or restricted fruit trees, summer pruning or pinching assumes very great importance, from the power and control it gives the cultivator over the trees. Should the bottom branches of the trees show any signs of weakness, leave them unpinched for a season or two, but pinch more closely and assiduously the stronger-growing parts, to divert the flow of sap into the weaker parts. By pinching the growing shoots of trees the flow of sap may be turned in any direction in the same way that the flow of water can be regulated by a tap attached to a water-pipe. Pinching a shoot stops the flow, whilst leaving it unpinched encourages the flow in that direction. The question of summer pinching is deserving of very close study, not only in its application to fruit trees generally, but the best mode of treating each particular tree should be separately considered. There is too much variation in the strength of fruit trees to permit all to be treated exactly alike, without in some cases causing derangement in the health of the trees ; for whilst the strong grower must be repressed, it may be necessary to leave the weakly one untouched, and even by further means to encourage growth. Pinching, quite as much as root-pruning, enables the growing power to be repressed, and in a more natural and less hurtful way, because the check can be given gradually and at the right time. In most cases summer pruning is delayed too long, often till the young shoots are 1 ft. or more long, and are getting firm at the base, and then, perhaps, they are cut back to three or four buds. But during the time of this rapid extension of wood the roots have felt the stimulating effect of so much foliage, and as in many cases cultivation is carried on almost up to the trunks of the trees the roots have no chance but to strike downwards ; and as this occurs year after year the system of the tree gets out of order and refuses to bear fruit or blossoms, and of course when that condition is arrived at the only remedy is to lift, root-prune, and re-plant ; but if the growth had been attended to earlier, a regular steady root-action would have been carried

on in proportion to the growth, for there is always a reciprocity of action between roots and branches, and when the latter are encouraged or allowed to extend themselves, the roots, to meet the heavy demand made upon them, must descend into the moist subsoil; and when that takes place, nothing but watery unripe wood will be produced till the tree is lifted out of the cold stratum, and its roots brought back nearer to the surface. In the meantime there is a season or two lost, and there is a possibility of the roots being trimmed in too much, and then the tree will require a year or two to recover its proper healthy and vigorous tone. In dealing with a well-balanced tree, the most reasonable way of proceeding would be to commence pinching when the longest shoots had grown 7 in. or 8 in., and shorten them back to five or six buds, going over them at intervals of three or four days until all were pinched or shortened back, making the time extend over three or four weeks. In this way no undue pressure would be placed on the roots, and the tree would be maintained in a healthy and vigorous state through both roots and branches; the sap that ran to waste in watery spray would be diverted into forming fruit-buds, and an early fruit-bearing habit formed that would tend still further to check any undue development of useless wood. When summer pinching is intelligently and well carried out, there is only in extreme cases any necessity to resort to root-pruning.

THINNING THE FRUIT.—The importance of this cannot be overrated; but to thin fruit on tall standard trees would in most places be impossible. Every three or four years, on the average, there is an abundant crop, sometimes so abundant that only the finest fruit will pay for gathering; but the exhausted trees after such an effort must have time to recover their strength, and this alone, without any reference to the ungeniality of our spring, would account in many cases for blossoms falling off and refusing to set, and for the young fruit falling off after setting. A weakened or exhausted tree has not the power to resist ungenial influences. The blossoms are weak and often imperfectly developed, and are ill adapted to meet the extremes of temperature frequently occurring in the spring of the year. With dwarf trees or espaliers this ought not to be, for the thinning of the fruit might be easily accomplished, leaving one only where three or four are usually growing in a prolific season; thus the fruit-bearing power of the trees would be maintained in a regular state, and a moderate crop of fair-sized fruit every year would pay better than to have

the trees overladen during a year of plenty, when the fruit will scarcely pay for the labour of gathering.

The Pear.

The Pear is one of the hardiest and most vigorous of our fruit trees; it is capable of adapting itself to soil and situation even better than the Apple. But the situation must be well drained, or there will be a difficulty under any system of management in maturing the wood. On deep dry soil, there is no necessity for working Pears on the Quince. It is on shallow soils resting on wet cold clays which even when drained cause so much soft spray to be produced, that the value of this stock is seen and appreciated. In many respects there is a similarity between the treatment suitable for Pears and Apples; and much that I have written on the latter will be equally applicable to the former—as, for instance, the preparation of the soil before planting, and in the necessity of checking the descent of the roots into a bad subsoil, surface-mulching, especially where a surface-rooting, or, as in the case of the Quince, a moisture-loving stock is used. Summer pinching and thinning the fruit are all important matters in Pear culture, and success will in a great measure depend upon the way in which they are carried out. Pears are especially adapted for espalier training, and a good fruit-bearing tree is more quickly formed than even in the case of the Apple. But as the Apple does not easily assume a pyramidal outline, so the Pear is not readily converted into a dwarf standard. But where espalier training cannot be adopted, the pyramidal is the best and most useful form. The trees should be planted 6 ft. apart, and may be allowed ultimately to attain a height of 8 ft., which will be high enough for a small garden. Of course care must be taken that the tree is properly built up; as in the case of the espalier, if the leaders be allowed to grow too fast, the lower part of the tree will not be well furnished. A wire hoop fixed to three stout stakes will form a very good base for training. When the tree is first headed down after planting, the best and most centrally placed of the young shoots should be selected for the leader and trained up vertically, and the others should be trained at equal distances apart horizontally, and fixed down to the wire to form the base. It is important that a good foundation should be secured to the future tree before the second tier of branches is formed, and this is entirely a matter of pruning and training. Much can be done in summer about the end of July by pinching a strong shoot or drawing its

point downwards, and by that means driving the sap into the weaker branches. The leader may be pinched when it has grown about 18 in., in order to throw the strength into the lower buds. At the second winter's pruning the leader must be cut back to within from 6 in. to 1 ft. of the base of the new wood, this depending entirely upon its strength and the strength of the tree generally. Again, the best shoot must be selected for the leader, and the others tied or linked down to the shoots made the previous year. This course must be followed until the tree has attained its allotted size. If it have proved successful, the shape will be a perfect cone, with the points of the branches assuming a weeping or pendent form. In the event of a good selection a small plantation of pyramidal Pears will in the course of a few years turn out to be a most interesting and profitable experiment, involving but a slight expense and an inconsiderable amount of labour, and that, too, of an agreeable kind. Pinching a strong shoot, and drawing its point downwards at the proper time, calls rather for intelligent observation than practical skill, as the term is usually applied, and the man who has had no experience in fruit culture, if thoughtful and persevering, may obtain as much success as the practical cultivator, especially if the latter be imbued with prejudice and preconceived notions, and too much given to rule-of-thumb work.

The Apricot.

In districts where the Apricot generally fails on the open wall it may often be seen flourishing against the gable end of a warmly situated cottage or farm-house. The chief drawbacks to the successful cultivation of Apricots are unsuitable soil and an unfavourable climate—the latter usually exercising more influence than the former. But soil that is unsuitable may in a limited space be modified and altered in character at a trifling expense, while climate may, to a certain extent, be ameliorated by shelter and selection of the most favourable sites for planting. It will, I think, be readily conceded that the walls of any dwelling or stable are more warmly situated, and consequently enjoy a better climate than most garden walls, especially where the latter are of a considerable length, with no arrangement, either temporary or otherwise, to counteract the effects of the keen cold currents that rush along their sides. In planting Apricots or other fruit trees against either cottages or farm buildings, the soil should first be thoroughly broken up at least 6 ft. in width from the wall, and 2 ft. deep. If of fairly

good quality, that is, neither clay nor sand, nor one in which either predominate to an injurious extent, and if the subsoil be dry, which in most cases it would be close to a dwelling-house, the trees may be safely planted without any addition whatever; and the fact of the soil having been previously unoccupied by fruit trees will make their early growth rapid and vigorous. On very retentive soils, in order to insure the health and fruitfulness of the tree, it will be better to be content with a shallower border, and that might be raised 6 in. or so above the ordinary ground-level. Concrete 4 in. in depth should be placed over the bottom of the hole, resting on the firm, unmoved subsoil, to keep the roots from penetrating it, and to compel them to take a horizontal direction. Some efforts should be made to renew a portion of the soil where it is bad, and there is scarcely a place where a few barrowfuls of fresh turfy soil may not be had, if looked sharply after. Whilst speaking of shallow borders, I may say whoever adopts them should see that the trees do not suffer from drought in a dry season. The necessity for this has often been overlooked, and the trees have become stunted and starved without the cause being suspected. No doubt deep rooting, even on good soils, is a disadvantage in some respects, for the nearer the roots are to the surface the more manageable is the tree. Mulching and watering must not, however, be neglected, more especially when the trees are heavily cropped. It need hardly be stated that as water enters largely into the composition of all fruits, unless it is freely given in hot summers, the fruit must be small. It is the same with cultivated fruits as with domesticated animals, when in a wild state they can cater for themselves, but under more artificial conditions and circumstances their wants must be provided for. The best form of training for all stone fruits is what is commonly termed the fan shape, and although we may take it as a general principle that the less the knife is applied to Apricots the better, still the tree must be headed back in its early stages to insure the necessary breaks for clothing the bottom; if this be not done, the bottom of the wall will always remain indifferently furnished. Experience has proved that a good deal may be accomplished in training by keeping the middle of the tree always open, thus diverting the sap as much as possible to the lower limbs. I may refer the reader to what I have previously written in this article on summer pinching. Often where Apricot and other stone fruit trees have been indifferently progressing, a dressing of lime and soot over the borders and lightly forked in has been

found of great service to them. Lime rubble from old buildings might with advantage be mixed with the soil in planting young trees of Apricots, Peaches, and Plums, as these fruits do best in a calcareous soil, and soot is a stimulant especially invigorating and suitable without encouraging grossness of habit. It is also a very good remedy for nearly all insect pests, and may either be mixed with soft water, and syringed over the trees, or the trees may be dusted with it in dull, showery weather. Of course this mode of application is not suitable after the fruit has reached a good size. But if insects be well kept down in spring, as they ought to be, there will be no necessity for using it afterwards. There are two main principles adopted by different cultivators in pruning and training the Apricot, Peach, and Plum with a view to fruitfulness:—One is to rely chiefly or wholly upon young wood laid in annually, and to disbud or remove all foreright shoots when only 1 in. or 2 in. long; and the other, whilst not ignoring the expediency and the necessity for laying in young wood wherever there is room, consists in taking the chief crop from spurs growing on the front of the branches which have been encouraged to develop themselves by the system of pinching and pruning adopted. The latter is the plan most generally practised, and will, I think, be found most suitable for those who have not had the advantage of a special training in fruit culture. Whether it be on artificial or natural spurs, we have all one object in view, viz., to secure a crop of fruit, and that system that gives us the best chance of success with the least trouble must be undoubtedly the right one to adopt; but in either case the necessity for disbudding exists, and ought to be carefully attended to. Where the crop is taken indiscriminately from spurs, both on the young and old branches, the disbudding in spring should be limited to thinning out the young shoots that push in profusion all over the tree. This should be done when the shoots are an inch or so long, when they can easily be rubbed off with the thumb and finger, without running any risk of leaving any permanent wound in the bark of the branch; pinching or summer pruning will afterwards be an important item in successful management, but to this I have already referred very fully.

The Peach and Nectarine.

Peaches are not commonly grown in small gardens. Perhaps to the unskilled fruit-grower their pruning and training present more difficulties than other kinds of fruits; but when

the principles of disbudding and summer pruning have been mastered, there should be no other serious difficulty. Given a good border 2 ft. deep, free from stagnant moisture, with the bottom made impervious to the roots, wherever the subsoil is unsuitable, the whole future of the tree depends upon keeping down insects, thinning the fruit, and in carefully regulating the spring and summer growths. These are matters that an average amount of intelligence, rightly directed, will find no difficulty in successfully carrying out. What is termed disbudding is simply removing the surplus shoots in spring, when about an inch or so long, and in that stage they can easily be pinched off with the thumb and finger. Its object is to concentrate the strength and force of the tree into, comparatively speaking, a few channels, leaving only as much young wood as can find room for full development. If the branches be too thickly placed the wood will not only be weak, but will probably be imperfectly ripened, with the usual accompanying result of weak and imperfect flowers. In cold situations disbudding must be cautiously done. If a tree be denuded of too much foliage at one time, it chills the system too much, and any check in early spring always makes the trees more susceptible to the attacks of green and black aphides. It is best to commence by removing a few of the foreright shoots—that is, the shoots that break direct from the front of the branches; in a few days some more may be taken off, and so on, going over them frequently, until all wood not required for the next year's crop is removed. Some cultivators lay a good deal of stress upon selecting the shoots that are to bear the crops of fruit next year on the upper sides of the branches. It should be understood that the young shoot should be left as close to the bottom of each fruit-bearing branch this year as possible, for the purpose of fruiting next; and in a well-balanced tree, well filled up at the autumn or winter pruning, the shoot that bore the fruit this year should be cut off, to allow the young one to take its place, and so the tree will be annually renewed with bearing wood. With reference to the principle I have alluded to of always laying in the young shoot on the upper side of the branch, whether it has or has not any influence upon the well-being of the tree, it certainly tends to impress upon the mind the importance of working according to system, and so far it may be an advantage. Having decided which shoot is to bear the crop next year, all the others should be gradually removed to give room to lay it in; the leader alone should remain; but if the tree have covered its allotted space, that

also should be pinched back to four or five leaves, but a few must be left beyond the fruit at the end of the shoot to cause the sap to circulate, otherwise the fruit will not swell properly, but will probably drop off prematurely. In some cold districts the Peach, instead of being closely disbudded in the way I have described, has only some of the shoots thinned out and the others pinched back to three or four leaves, which not only forms a shelter to the young fruit, but also in unfavourable situations gives two chances of securing a crop, for the Peach will fruit on artificial spurs as well as the Apricot or Plum.

PRUNING THE PEACH.—As soon as the fruit is gathered, all the small shoots should be unnailed, and all the fruiting wood cut back to the point whence the young wood starts; unless there are vacancies to fill up, there is no occasion to wait for the falling of the leaves to do this, as I believe the sooner this is done in autumn the better the young wood will ripen; but shortening of the young wood had better be delayed till February for two reasons:—First, because after the buds have swelled a little there will be no difficulty in distinguishing the flower-buds from those that produce wood only, and it is important to cut each shoot back to a wood-bud, as without a leader the fruit, even if it set, will be flavourless; and secondly, leaving the shortening till the buds are pushing, and leaving the tree unnailed till the last moment, has a tendency to retard its flowering, and a few days' delay in the case of severe weather sometimes saves the crop. The young wood should be cut back one-third, one-half, or two-thirds, according to its strength and firmness; always cut back to well-ripened wood.

The Plum.

There is scarcely any fruit so accommodating as to soil or situation as the Plum, and not only has it these advantages, but if the fruit be thinned out when the trees are overloaded, and only known good and prolific kinds planted, it is a profitable crop to grow. The Plum tree is not so long-lived as the Apple or Pear, but it comes sooner into bearing. The wind is often destructive to old standard trees, for as age creeps on them the branches become more brittle. When this is the case, if the main trunk be healthy, I have often seen new life and vigour infused into old trees by heading them down, as they break readily out of the old wood. If this heading-down process be extended over two or three years, the trees will scarcely feel the check, and the gradual thinning

will prevent the total loss of the crop, as the young wood on an old tree commences bearing immediately. But dwarf trees are the best to plant in small gardens; they bear well when trained in the bush or pyramidal form, and small or moderate-sized trees are easily protected when large trees must take their chance. So far as profit is concerned, I believe a plantation of Victoria Plums will yield a larger return for the outlay than any other crop, but for home consumption it will be advisable to add a few other kinds in order to extend the season of bearing. As wall trees, Plums will grow and bear well on any aspect, and it often happens that trees on a north aspect will bear abundantly, when those on other aspects fail; this is due in some measure to late blooming, and also to the gradual rise of temperature on a north aspect after a cold, frosty night in spring. The sun does as much harm as frost if its rays fall on a frost-smitten tree early in the morning, and it is in the shade imparted by a thin flimsy covering warding off the sun's rays in the early morning that a crop has been saved as much as by the protection afforded from frost. The pruning, training, and summer management of the Plum so much resemble those already given for the Apricot, that I need not refer to them at greater length here.

The Cherry.

The May Duke and the Morello are the kinds best suited for a small garden; they may be grown in the bush form on the Mahaleb stock or fan-trained on a wall. In a warm corner against a wall the May Duke comes in early and often bears profusely. Not far from where I am writing there is a May Duke Cherry against the front of a cottage; I believe when it was planted little or no preparation was made for it, and the immediate space over its roots is partly paved and gravelled; yet the crop of fruit that the tree annually bears is something marvellous. No doubt the soil is suitable, and the hard, firm surface has much to do with its prolific habit. What I have seen in this way leads me to the conclusion that there cannot be a greater fallacy in fruit culture than to suppose that it is necessary to dig and delve over or amongst roots. It may do no harm the first few years, or rather I should say, no perceptible injury is done, but if anything beyond a surface cultivation be carried on it must drive the roots downwards. When once a tree settles down into a bearing condition the roots should not be disturbed in any way, and no implement beyond the hoe should be used during summer,

and where a little mulching can be put on in spring the use of the hoe may become unnecessary. What we require in a fruit tree is a medium annual growth—in fact, just a fair amount of extension in order to keep up the tree's health and vigour. And this is best secured by a firm soil and light annual top-dressing, but no manure should be placed in contact with the roots, as the chances are the growth will become too gross, and if so, farewell to fruit-bearing until the tree has been lifted and root-pruned. It is better to avoid the necessity for this if it can be done, which it may be, by a firm soil and judicious summer pinching. The Morello is a very prolific Cherry, seldom fails to bear, and is especially adapted for a north aspect. In September, when the fruit is ripe, it is often worth from 1s. to 1s. 6d. per lb., and the trouble required is but small. The fruit is produced on the young wood, and the disbudding and pruning recommended for the Peach are quite suitable for this Cherry. One of the chief faults in its management, observable almost everywhere, is laying in too much wood. Overcrowding the wood does not produce more fruit, but the reverse, and it tends also to debilitate the tree, and is often the cause of branches dying off in summer.

The Grape Vine.

OPEN-AIR CULTURE.—If the same pains and skill were bestowed upon the culture of the Grape Vine in the open air as under glass, a vast improvement would soon take place in its produce. Every cottager who has a bare place on his cottage with a southern, south-eastern, or south-western aspect, may plant a Grape Vine, and if he will give some attention to the preparation of the site, and learn the few simple rules applicable to its culture, he may add both to the comfort of his family and himself as well as to his income. Though the Grapes produced by open-air Vines may in most cases be inferior to those grown under glass, still instances may be found, which, though isolated, are yet sufficiently numerous to show that when the Grape Vine in the open air is well managed very good fruit is the result. The common errors in its culture are:—Training the main branches too thickly; delay, and in some cases almost total neglect, in disbudding; and overcropping. The latter, if fine clusters of fruit be desired, is a very great evil. It may not have so disastrous an effect upon outdoor Vines as upon those grown under glass, for the circumstances under which they are grown are less artificial, but none the less surely does overcropping have a most pernicious effect upon the quality of

the produce of any tree or plant subjected to it. True, the Grape Vine in the open air is one of the most enduring of plants, it being scarcely possible to kill it by neglect, but there is no comparison between the produce of a Vine well cared for and one neglected. Almost any soil that will grow good crops of vegetables will produce good open-air Grapes. But the Vine, like the Ivy, seems to have a partiality for old crumbling ruins. Some of the finest open-air Grapes I have ever seen were grown some years ago upon the remains of the old city wall at Norwich; the site was dry and warm, and the soil rich from the accumulations and decompositions of ages. Where the soil is fairly good trench it up 2 ft. deep and 6 ft. square for each plant; as they increase in size more space can be prepared for them. It will be an advantage if a few barrowsful of horse-droppings, fresh loam, lime *débris* from old buildings, and a few bones, can be worked in at the same time. There is hardly a possibility of making a mistake in adding a reasonable quantity of any of the materials just enumerated, as they are calculated to improve even the best soils as far as their adaptation to Grape culture is concerned. If the site be damp and resting on clay, put in the bottom 9 in. of brick rubble or stones, scatter a few spadeful of lime and coal ashes over the top, water it, and ram it down firmly; on this foundation place the soil and plant the young Vine. There are various ways of propagating Vines. Where there is a hot-bed or a greenhouse, or even a cold frame or hand-light, the best way is to plant single eyes in small pieces of thick turf about 4 in. or 5 in. square and 3 in. thick, laid with the turf side downwards; scrape a small quantity of soil out of the centre, press the Vine-eye into the hollow place so created, and fill up the space with fine rich soil. When a sufficient number of eyes have been inserted, they may be placed under a hand-light and kept close. If a slight bottom-heat can be secured, such as might easily be obtained by digging a hole in any warm corner, filling it up with manure covered with about 2 in. of soil to arrest and absorb any destructive gases that might arise in fermentation, the eyes will root and break stronger. When the hand-light is placed on the prepared site, the turves containing the Vine eyes should be placed closely together in it, and kept close. In cutting out the eyes leave about half-an-inch of wood on each side, and take off a thin slice of bark and wood from the side opposite to the bud, to induce the emission of roots. For open-air Vines February will be found an excellent time for this operation, and

the young Vines might be planted during the early summer, when hardened off and the border well prepared. There are various other modes of propagating the Grape Vine, such as layering, which may be done when the Vines are at rest, or during the summer when the young shoots are getting firm. Simply make an upward longitudinal cut about halfway through the shoot and through a joint to arrest the sap at that point; peg it with the cut side downwards into a small mound of rich soil and keep moist, or peg it into a pot of moist soil. Tie each layered branch to a stake to keep it in position. Cuttings of ripened wood 6 in. or 8 in. long, with an inch or so of old wood at the base, planted firmly against a wall at any time during autumn or winter, leaving about one eye out of the ground, will make thriving plants in a short time. Whichever plan may be adopted, some time between May and August is the best season for final planting, unless cuttings are relied on, and then autumn, as soon as the wood is ripe, would be found most suitable. If the young plants be taken from pots the roots should be carefully uncoiled and straightened out, and covered with about 6 in. of soil, and then mulched with 2 in. or 3 in. of half-decayed manure, giving them water when necessary. The first season, or the remainder of the season, after planting the growths might all be laid in to encourage root-action; but in the autumn, when the wood is firm and well matured, head them back to three eyes. In the following spring select the two best-placed shoots, train them up vertically, and rub off all other buds. When the shoots are 6 ft. high pinch out the terminal buds to strengthen and cause the back eyes to plump up; afterwards the new leader should be laid in, but all other laterals should be pinched to one leaf. In autumn prune to within 4 ft. of the base—more or less, according as the wood is strong and matured—and train the shoots out horizontally at right angles. From these horizontal rods train up vertically other rods 2 ft. apart to form the main branches of the tree, from which the fruiting spurs will issue in due course. As regards cropping, scarcely any arbitrary rule can be laid down, for so much depends upon the strength of the Vines; but no matter how strong or vigorous they may be, one bunch only should be left on each shoot, and it will be better to still further reduce the number, if the bunches be large. In spring, as soon as the bunches are visible, commence disbudding, by gradually removing the weakest growths, until only sufficient young wood to fill up the wall is left. These should be laid in at an angle of something like 45°, and

be stopped at one joint beyond the fruit, and all subsequent laterals during the season pinched to one leaf. If time can be spared the bunches, or some of them, might be thinned with the scissors; but it should be done as soon after the berries are set as possible, for if delayed much longer, the result may perhaps end in disappointment. Vines may be planted as single cordons, and trained either vertically or obliquely, or in any other form, but where there is sufficient room for the roots to extend, in my opinion it is much better to allow each Vine to cover a good extent of wall, and where this is practicable, they will improve annually for many years. What is termed the winter pruning should be completed as soon as the leaves fall; it is a great mistake to delay this operation till February or March, as is too frequently the case. Healthy prolific Vines may always be pruned back to one good eye, and unless they have been otherwise badly treated, they will always show plenty of fruit. In the course of years it is a good plan to cut back an old rod occasionally and lead up a young one, as young wood always bears the finest fruit. In dealing with old Vines that have been neglected, cut out half the main rods at the autumn pruning, and the following spring train up young shoots in their places. It is best, of course, to take out every alternate rod, and as soon as the young rods come into bearing—which they should when one year old—cut out the remainder of the old ones, and replace them with young wood the following season; this will give an opportunity, if the main branches have hitherto been too much crowded, to reduce their number, and thereby open out the Vine. Thus the Vines, so far as the branches are concerned, will be thoroughly renewed; but, at the same time, if it be found necessary, something ought to be done for the encouragement of healthy root-action. If exhaustion or poverty in the soil be the only fault, this can be overcome by heavily mulching with short manure, or by sprinkling guano over the border twice or three times during the season, and watering it well in. If the border be too damp, or the soil too close and sour, the only effectual remedy is to remove it carefully, saving as many of the roots as possible, and to remake the border with fresh soil, taking care that the drainage is not again neglected. Vines trained on cottages often have their roots running under paved courts, which will therefore be somewhat difficult of access; but, as a rule, Vines so situated are in the best of health, and if the wood be well thinned out, and the disbudding and pinching regularly attended to, they may continue for many years

with their fruit-bearing powers unimpaired. Should a stimulant at any time be necessary, guano may be used without any disagreeable effluvium arising therefrom.

The best Grapes for open-air culture are:—*White*—Royal Muscadine; *Black*—Esperione.

THE VINERY.—Thousands of small gardens now-a-days have each their Vinery, and in favourable situations good Grapes have been grown without going to the expense of making elaborate borders. In one of the largest and most successful Grape-growing establishments in the Eastern Counties nothing in this way was required beyond trenching up the ground 2 ft. or 3 ft. deep and adding manure. The soil was naturally a deep, mellow loam, and as the place was situated on the side of a hill the drainage was perfect, and in any similar situation no great expense need be incurred in border making. But there are a great many places—indeed, the majority are so—where, if first-class Grapes be desired, a border for the roots must be specially prepared; and where this is necessary it is a mistake to attempt it grudgingly, half measures being seldom satisfactory. Where the soil is really bad it is better to have it wheeled or carted away, and replaced with fresh. The top spit from an old pasture about 3 in. deep is the Grape grower's ideal of a soil for the Vine, and to five or six loads of this may be added one load of horse-droppings or any thoroughly good manure. If the loam be heavy, old mortar, charcoal dust, and crushed bones may be added; or if the main staple be light and sandy, marl or clay will be beneficial, especially for thick-skinned Grapes, such as Muscats and other late-keeping kinds. The drainage of course must be first attended to, and in places where artificial borders are necessary it is better to have at least half their bulk or thickness made above the ground-level, and in the case of a new building this should be borne in mind in order that the front wall should be of the necessary height. I should prefer to have the front wall plates resting on 14-in. piers 4 ft. apart, rather than have the wall on arches, which is a very common arrangement. Very good Grapes have been grown where the roots have been confined to inside borders, and the same is also true when the roots are exclusively outside, but I think the best arrangement is to have the border partly inside and partly outside, with the Vines planted inside so that the roots can spread out in all directions. Rough stones or brickbats 1 ft. in thickness should be placed on the bottom, which should have a sufficient inclination to the front to cause any excess of moisture to pass freely away to the

drain laid along the front of the border and 1 ft. below it, the space to be filled up with stones. It is not necessary that all the width of the border should be made at the same time; in fact, it will be better for the Vines not to do so, as the roots cannot occupy it all at once, and if 6 ft. or 8 ft. be made to start with, the remainder can be added when the Vines are in full bearing. The width of border must in some measure depend upon the size of the house, but it should not be less than the length of the rafters, and it may be as much more as is convenient. As regards the depth of soil in Vine borders local conditions must be so fully taken into consideration that it is hardly safe to lay down a rule thereupon. In the Eastern Counties, with a porous subsoil and a limited rainfall, I should recommend the borders to be made at least 3 ft. deep. In some parts of the Midlands and in the Northern and North-western Counties where the rainfall is greater, a depth of 2 ft. might be found sufficient. On a dry soil I should not recommend shallow borders to be made unless the facilities for watering are almost unlimited, but where the situation is unfavourable shallow borders are more manageable. It should be borne in mind, however, that the more artificial the conditions are under which fruit trees are grown the greater is the necessity for unremitting attention to them. If a Vine be planted against a wall or in a glass house, and left without the requisite amount of care and attention, comparative failure will be inevitable. A tree planted in a shallow border requires more care in mulching and watering than if the soil had been of a greater depth. This, no doubt, explains why men who have been successful fruit-growers in one place entirely fail on moving to another, where the local conditions are altogether different. Like means will not always under all circumstances produce like results. I have already adverted to the propagation of the Grape Vine, and therefore it is not necessary to go further into details.

Since the *Phylloxera vastatrix* has made its appearance in English Vineries, where Vine eyes can be obtained from clean, healthy Vines, it may be advisable to raise the young Vines for planting at home; and this can easily be done by starting them on turves in a gentle hot-bed in February. The borders could be made in March, and the young Vines planted in May, or as soon as they were in a fit condition to put out. The best Grapes for a small house are Black Hamburgh, Foster's Seedling, Buckland Sweetwater, Black Alicante, and Madresfield Court Black Muscat; and if only two kinds be desired, I should select Black Hamburgh and Foster's Seedling.

Although I have suggested that the planting should be done in May, as it gives a longer time for growth than if planted later, I have planted in August, and never had Vines succeed better than those did. The soil then is so warm, and the roots take such a thorough hold of it, that when spring comes round again they are prepared to make a very vigorous start. One Vine should be planted to each rafter, but a second rod may be trained up the centre of each light, unless the house is used for plants as well as Grapes; in that case it will be better to do without the additional rod. In the autumn, prune back to the bottom of the rafter, and the following season the young rods will cover the roof early. Stop them when they reach within 2 ft. of the top, and pinch all laterals just beyond the first leaf. This is important, as the size of the future bunches is dependent upon having well-developed foliage on the main rods. The third season, even when planted as late as August, they should be strong enough to carry a full crop. Of course, much will depend upon the care bestowed on the young Vines. The main agents of growth are heat and moisture, accompanied by a careful attention to ventilation, and these either are, or ought to be, entirely under the cultivator's control, and should be present in such proportions as to secure the most perfect development and maturation both of wood and foliage, for good fruit never yet came from weak, spindly wood, or thin, flimsy foliage. I am assuming that little or no artificial heat would be employed, for to force Grapes successfully calls for skill of a higher order than when they are brought forward with the warmth of the sun only. Much, however, may be done by early closing on bright afternoons, not only to forward, but also to bring to a high state of development both size and quality. In the application of atmospheric moisture, almost everything depends upon the external temperature. If the weather be bright and sunny, damp all dry places on both borders and paths at about four o'clock; when the house is closed, and during periods of bright weather in summer, when the crop is swelling off and great demands are made upon the plants, the floors may be damped in the middle of the day. Both the colour and flavour of the fruit depend upon keeping the foliage healthy, and this mid-day damping of paths, &c., in hot weather is a great support to the foliage. Small houses require more attention in this way than large ones, because from the latter containing a large body of air they are less influenced by the external temperature. When

the fruit begins to colour a drier atmosphere must be maintained, damping only on very hot days. All Vine borders should be heavily mulched with manure both inside and out, and this is doubly important with shallow borders. The plan I have adopted for years for late houses is to mulch in April, leaving it on till the following February or March, then fork it in lightly, leaving the surface loose and exposed for a few weeks to aerate and sweeten. No doubt this forking destroys a few of the surface-roots, but the benefits derived from the operation seem to counterbalance any ill-effects produced by it. In the course of eight or ten years, as the fibres in the soil decay, this constant mulching tends to render the soil rather pasty, but this may be rectified by forking in a good layer (2 in. or 3 in.) of old plaster, or the *débris* from old buildings; but 10 in. or so of the top soil, taken off and replaced with fresh, turfy loam, will be found a superior treatment. In this way the health and fertility of the Vines may be kept up for many years. In removing the top soil where surface-rooting had been encouraged, great care must be taken not to injure the roots more than necessary. The steel fork should be carefully used to extricate the largest roots from the soil, and it will be better not to begin the work till there is a chance of completing it without any unnecessary exposure or delay. As regards watering the roots, in very many cases Vines do not get sufficient water. They are gross feeders, and in no case—not even in winter—should they be allowed to become dust-dry.

Inside borders are perhaps more likely to be overlooked and neglected than those outside, and in all the early stages of growth it will be better if it can be conveniently arranged, to have a portion of the water heated to mix with the remainder, and raise the temperature of the whole. Some misapprehension may possibly exist as to what constitutes a good soaking of water, as the term admits of several interpretations being placed upon it. Roughly speaking, if a border require watering beyond a mere surface-sprinkling, for the purpose of raising vapour in the atmosphere, less than what would be equivalent to 2 in. of rainfall all over the surface would not be sufficient, and this must be given as often as is necessary—in all probability it will be required two or three times during the growing season again, when all the fruit is cut; and once more about February or March, when growth begins. This is mere conjecture, but it is as near as can be given without knowing all particulars of the strength of the Vines, and the constitution and condition of the borders.

VENTILATION.—This is of such great importance for the successful development of the Grape Vine, that if great attention be not bestowed upon it, either the fruit may be spoiled by mildew, or the foliage destroyed by red spider; or, to take the least of the evils that may arise from neglect, the fruit will probably lack colour, flavour, and finish. From a cause to which I have previously alluded, small houses require more attention than larger ones. The thin stratum of air in a small house soon becomes heated by the sun, whilst at the same hour in the morning the temperature of the air in a large house would be comparatively cool. In old-fashioned houses glazed with small squares of glass, with wide laps between them through which the air had free access both by night and day, there was not much occasion for night ventilation, as at times, especially in windy weather, there was an excess of air; but with modern-built houses, where large squares of glass are used, early-morning ventilation is especially important, and on mild nights, or whenever frost is not apprehended, a small aperture to admit the air along the back of the house will keep the inside atmosphere in motion, and will otherwise be beneficial. The proper way to ventilate a Vinery when growth has commenced is on bright mornings to slightly open all the back ventilators not later than six o'clock, gradually increasing the ventilation as the sun gets higher and has more influence on the glass. Sudden changes or extremes of temperature are always hurtful to tender foliage, and when the houses are kept closed till eight o'clock or later, as frequently happens, the lights are opened too wide, in order to keep down the temperature, whereby a rush of cold air is admitted that chills and often rusts the young fruit. The proper time to push on growth by a little extra heat from the sun is in the afternoon. Commence reducing the ventilation by half-past three, and have all finally closed by four o'clock, then if all the borders and paths be well moistened a genial growing atmosphere will be created that will be exceedingly beneficial to the Vine; and on mild nights, about eight or nine o'clock in the evening, half-an-inch of air may be admitted in a few places along the back to prevent any stagnation in the atmosphere of the house. In windy weather this will be unnecessary, as in the best glazed houses when any disturbance takes place in the atmosphere outside, its influence is always felt under a glass roof. Where little or no artificial heat is used, tables of temperature would be of little use to the inexperienced cultivator, and might possibly mislead him. Advantage should be

taken of favourable weather to ventilate freely, especially in the early part of the day, gradually increasing it as the thermometer rose till ten or eleven o'clock; when in hot weather let all the lights be open. Oftentimes in spring we have a bright sun and at the same time a keen, biting wind, and it is at such times that caution and judgment are necessary in order to avoid cold currents rushing through the young foliage and fruit. On such days front air must be sparingly given, if at all, and it is better to allow the temperature to run up a little higher than usual, freely sprinkling the paths and borders with water to assist the foliage, rather than run any risk from cold draughts: the house may at all times during the growing season, or till the fruit begins to ripen, be closed early enough for the thermometer to rise to 80° or 85°, and this will have a considerable effect in swelling the fruit to a good size. When the Grapes begin to colour, a free circulation of air should be left on all night, or the colour will be imperfect and the flavour deficient. The bearing wood of Vines should be trained at least 15 in. or 16 in. from the glass. When Vines are trained close to a glass roof, where large squares of glass are used, and the rafters are light, and consequently the shade almost nominal, the sudden changes of temperature often have an injurious effect upon the health and vigour of the Vines. Following close upon hot bright days we often have very cold nights, and the foliage close to the glass loses colour and looks pale and sickly, as much or more perhaps from the radiation at night as from the heat by day. I have known several cases where the trellis had to be lowered in consequence of this, and afterwards the Vines recovered their healthy appearance.

THINNING THE GRAPES.—This is a matter upon which no one can speak with any degree of confidence without a fair amount of experience of the strength and condition of the Vines. Speaking generally, at least two-thirds of the berries should be taken out in such a manner as to give each berry left, room to swell to its full size. This should be done as soon as the berries are well set, and as far as possible leave in all those that appear to be taking the lead, and cut out the small ones. Where high culture is carried on severer thinning will have to be adopted, in order to give the berries of Black Hamburgh and Buckland Sweetwater room to swell to their full size. Thinning Grapes should be performed with a careful hand, to avoid cutting or injuring the remaining fruit, and the one operation should be final. Nothing but practice can make an expert Grape thinner.

Bush Fruits.

Although Currants and Gooseberries are commonly grown as low bushes, yet, with the exception of the Black Currant, they all submit readily to any form of training. When grown as low bushes on a clear stem 9 in. high, with the main branches springing from it at equal distances apart forming a sort of cup or basin, with the centre kept open by pruning so as to admit light and air, good crops are generally obtained. The chief objection to the low bush form, however, is the liability of the fruit to be spoilt by heavy rains splashing the earth over them when nearly or quite ripe. I have seen whole quarters damaged in this way in July and August by heavy thunderstorms.

In small gardens, where the most has to be made of the space, the pyramidal form is very suitable for Gooseberries. This style of growth can be secured as follows:—A stout stake 5 ft. or 6 ft. high should be driven into the ground nearly close to the young tree, and a central leader selected and tied to it, and if regulated in summer by thinning and stopping, and by shortening in winter, in the course of a few years a handsome, cone-shaped bush will be developed that will bear a large quantity of fine clear fruit. The Red and White Currants will not so readily assume a pyramidal outline as the Gooseberry; their wood is stubborn and erect, and the shoots are apt to split off if the training be delayed till the leaves have fallen. To obviate this a wire hoop, about 18 in. in diameter, should be fixed to the tops of three stakes, and the shoots should be drawn down to the horizontal position as they grow during summer.

Gooseberries and Currants may also be advantageously cultivated as espaliers from 3 ft. to 6 ft. high. Where expense is not the first consideration, the espaliers may be substantially erected, with iron standards to support and strain the wires. If planted in quarters or beds, they may be 5 ft. high and 4 ft. apart, and they make very neat and serviceable boundary lines to quarters of vegetables or by the sides of walks. In the latter case, if not more than 3 ft. or 4 ft. high, they may be planted near the edge of the walk, instead of Box or any other edging. The gravel may be placed close to the stems without the trees suffering any injury; but the edge of the border at the back of the espaliers should not be dug within 1 ft. or 2 ft. of their stems, except the trees require manuring, when it may be lightly forked in, and not disturbed, save by an occasional hoeing, till a similar applica-

tion is necessary. If the young trees be planted 4 ft. apart, there will be space sufficient for six branches to each tree. When planted out them down to the bottom wire, which should be 8 in. or 9 in. from the ground; select two of the best placed shoots to form the foundation of the future tree, and train them up obliquely at an angle of 45° or thereabouts; and when the growth is finished before the wood becomes ripe, lower the branches down and secure them to the bottom wires. If the trees have progressed well, the branches on the bottom wire will pretty well meet, and there should be no difficulty in the following spring in selecting a sufficient number of well-placed shoots to lead up vertically, and clothe the wires regularly and well in a comparatively short time. In espalier training, the young growth should be pinched or shortened back in summer, and then beyond shortening back a long spur there will be very little pruning required during the winter. With pyramidal or bush training a little more freedom of growth might be allowed, simply thinning out the young shoots in summer to let in light and air to the fruit, and at the winter pruning some well-placed shoots might be left to fruit almost their full length, whilst occasionally an old badly-placed shoot might be taken out and a young one left to replace it. In thinning the young growth in summer an eye should always be had to the shape of the trees, and those shoots that are not required for keeping the tree well furnished with bearing wood should be cut out; but any system of pruning or management that encourages a large annual growth, and leaves it all to be dealt with in the winter-pruning, is wrong in principle, and will soon lead to unfruitfulness. I have seen cases of this kind more than once, viz., where summer-thinning had been neglected, and a system of very close winter-pruning followed, that the trees at last positively ceased to bear. The same result sometimes occurs in the case of Grape Vines when from any cause their roots have been driven too far from the surface; and if they cannot immediately be lifted, a crop can often be obtained by altering the system of pruning, and instead of continuing the short spur-pruning, adopt the short or long rod system, or prune to a good plump eye. In like manner the Gooseberry can be brought back to a bearing condition by leaving in more young wood. The fault of overpruning is, however, not common with cottagers, who usually err in the opposite direction, and do not prune at all. In small gardens, where plenty of fruit is required not only ripe for immediate

consumption, but also to pick in a green state, it is best to follow a medium course in pruning what are termed bush fruits. In summer thin out the young wood moderately when about 6 in. long, and in autumn, when the leaves fall and the eye can range over the branches and note their position and direction, complete the operation by cutting out all branches that cross each other, thinning out the centre and leaving a young, bearing shoot wherever there is a vacancy to fill up. By cutting to an eye pointing in the direction the future branch is required to take, the shape of the tree can be maintained without much training when it is once formed.

Black Currants bear altogether on the young wood, and therefore require rather different treatment. The bush form is better adapted for them, and they do best when allowed to grow quite naturally without any attempt at training, and in pruning well thin out the wood, taking out here and there a main branch from the bottom, and encourage a young shoot to occupy its place. That system of pruning that secures a good supply of well-ripened young wood all over the bush will be the most successful. The young wood should be left nearly its full length, the soft unripe points only to be cut off. Black Currants should be planted on the coolest, dampest spot in the garden, and if planted in rows 5 ft. apart, so that one row helps to shade the others, they will thrive all the better.

Currants and Gooseberries are so easily raised from cuttings that it is unnecessary to refer to any other method of propagation. Select the cuttings from healthy bushes, and they should be well-ripened shoots from 9 in. to 12 in. long; cut close under a joint, and remove all the eyes from the bottom upwards, except the three upper ones, which will form the future tree. Plant in rows from 4 in. to 6 in. apart, and about 3 in. or 4 in. in the ground, and 12 in. between the rows. They must be firmly planted, and in about two years they must be transplanted to some other position.

The Raspberry.

A cool, deep soil, suits the Raspberry best, and in all such positions it is a very paying crop; but almost any soil, however unfavourable it may be in its general characteristics, can by trenching and manuring be made capable of producing very good fruit. There are two systems of culture that I think are admirably adapted for the successful development of the Raspberry in small gardens. The first is to plant in rows 15 in. from plant to plant, and from 5 ft. to 6 ft. between the rows, and

train the canes diagonally to espaliers $4\frac{1}{2}$ ft. high; two wires will be ample, one at the top and the other about midway between that and the ground; drive in some stout Oak stakes 10 ft. or 12 ft. apart (having previously charred the bottoms to preserve them), and strain the wires on them. This is work that can be done by any labourer, and will not cost so much as placing a stake to every three or four canes when grown in clumps, and the fruit will certainly be finer and better. The other plan is to grow them in rows 15 in. apart and 4 ft. between each row, but not to train them at all, simply thinning out the young wood well in spring to admit as much light and air as possible, so that the canes may be strong and short-jointed. When the fruit is gathered cut out all the old canes that have ceased bearing, and still further reduce the number of young canes, leaving only enough to produce a crop the following year. Success will be in proportion to the way in which these details are carried out, for almost everything hinges upon having sturdy, short-jointed canes. In February cut back the canes to 3 ft. and mulch with manure. As Raspberries are surface-rooting plants, it is not advisable to dig amongst them. On dry, porous soils it will not be necessary to disturb the surface at all if it be mulched, but very retentive land, if not stirred, sometimes becomes sour and unwholesome after much treading, and should be forked up in autumn to aerate and sweeten it. The autumn-bearing Raspberries will succeed in a somewhat drier position than the summer-bearing kinds. They are, perhaps, not much grown in small gardens, but they are very useful to mix with late Red Currants in a tart, or for an occasional dish for dessert. Their treatment is different from that of the summer-bearing varieties, inasmuch as they are cut down close to the ground every autumn, the effect of which operation is to induce the canes to throw up a new growth from the roots in spring. This new growth should be well thinned out, leaving only the strongest shoots for fruiting.

The Strawberry.

A deep unctuous loam is the best soil for Strawberries, and an open situation, away from the shade of trees or hedges, is the best position for the main crop. A few early fruit may be obtained from the foot of a south wall, or from the south side of a specially prepared ridge, if the plants be well watered in dry weather, until the fruit begins to ripen, and also after it is gathered, should the plants be intended to remain for another year. The Elton or Frogmore Pine may be planted in a north

aspect for a late crop. This, however, merely extends the season of bearing, and does not affect my first proposition, viz., that the bulk of the crop should be grown in an open airy situation. In preparing the land for Strawberries, if it be of an inferior character, let it be bastard-trenched, that is, mark out the ground in the same way as for ordinary trenching, and in opening the first trench—which may be from 2 ft. to 3 ft. wide—take off the top spit only and wheel it across to the opposite side, where it is intended to finish; then put a layer of manure on the top of the second spit, and break it up thoroughly, mixing the manure with it with a steel fork. The top spit of the second trench should be thrown on the top of the first, and the bottom manured and forked up deeply in like manner. In this way the best soil will remain on the top, whilst the bottom will be manured, loosened, and permanently improved.

Strawberries are surface-rooting plants, and it is only ground that has been often trenched and is in thoroughly good condition that will be suitable for their healthy growth after the top soil has been buried. A firm soil is absolutely necessary for this kind of fruit; therefore the trenching should be done some time before planting takes place in order to give the land time to settle. In small gardens where it is necessary to make the most of the land, the runners should be secured early in July, and planted about 6 in. or 8 in. apart in a nursery bed, there to remain during the winter. They will make as much growth in such a position as if finally planted out, and then the land intended for the new Strawberry plantation can be thoroughly stirred and exposed during the winter, and in March, when the surface is dry, it can be leveled down and made firm by treading or rolling. The plants should be lifted with good balls to their roots and carefully planted, being thoroughly soaked with water, with a little dry earth drawn up round the plants with the rake to check evaporation. In cold situations this plan will be found to answer better than if planted in August. A dressing of thoroughly decayed manure can be spread over the surface and lightly forked in during the preparation of the ground just previous to planting. A sprinkling of soot and salt will also be beneficial, especially if the land be much infested with slugs or snails. Plant in rows 2 ft. apart, and 1 ft. between the plants in the rows. After the first crop of fruit is gathered every alternate plant should be pulled up, leaving them finally 2 ft. apart each way. Some of the most practical growers of Strawberries differ

as to the length of time a Strawberry plantation should occupy the same spot, but local circumstances should always have some weight with every cultivator in coming to a decision as to the time of planting a new bed; anyhow, Strawberry beds may profitably stand three years in almost every kind of soil or situation. It is important to mulch the ground between the plants early in the spring with long, fresh stable litter, if it can be obtained; if not, use the best substitute at hand. This mulching is beneficial in several ways: it keeps the fruit clean, checks evaporation from the soil, and if put on early helps to shelter the plants during a cold spring. Some care should be exercised in selecting the runners from prolific-fruited plants only; in fact, all others should be pulled up as soon as their true character is discovered: in this way only can Strawberries be kept from deteriorating.

It is a common plan with first-class cultivators to peg the early runners into small pots filled with rich soil, and supply them well with water till they are well established, at the same time stopping all growth beyond the pots, so that only one plant is attached to each runner. Good plants may also be obtained for making new plantations by laying down little mounds of rich earth and pegging a runner on to each mound, or pressing it down on the new soil and keeping it in position by a small stone. In the case of a plantation that is not intended to be destroyed all the runners should be removed as soon as possible after the requisite number has been obtained, as they only weaken the plants if allowed to continue thereon. A few of the old, discoloured leaves may be cut off at the same time, but to mow off all the foliage (as is sometimes done) is a barbarous practice. Top-dressings of manure may be given to Strawberry plantations at any time during autumn, winter, or spring if really needed, and on dry, porous soils this will be more necessary than on lands of better quality. Some discrimination is necessary, however, for although Strawberries are gross feeders, yet, if over-manured, they have a disposition to run too much to leafage, and rank luxuriant growth is as inimical to fruit-bearing in Strawberries as in any other kind of fruit-bearing plant or tree.

General Remarks on Pruning Fruit Trees.

There are but few operations in fruit growing that require so much thought and study as pruning, that is, if it be intended to carry out rationally this important operation. If it be true that every distinct variety of fruit tree has a style of growth

peculiar to itself, the importance of taking into consideration their individual characteristics in dealing with them becomes self-evident. Judicious pruning will always be necessary in first-class fruit culture, but the term judicious may, to different minds, convey different meanings. Where summer-pruning has been systematically performed there will be little to do in winter beyond shortening back a long spur, removing a dead one, or thinning those that are too thickly placed, and cutting back the leaders. In the case of young trees only the unripe points of the leading shoots should be shortened back, unless the trees are scantily furnished. In pruning old neglected trees there is a temptation, for the sake of uniformity of appearance, to saw out all old spurs, especially in the case of wall or other trained trees; but this is work that should be done very gradually and spread over several years, that is, if the trees have been bearing fruit principally on the old spurs, which is generally the case. I have known instances where for the sake of neatness old spurs have been removed from old Pear and Apple trees, and the crop of fruit has been lost for several years in consequence. The old spurs seem to have arrested the sap, and to have converted what would otherwise have been wood-buds into flower-buds, and when they were removed, the pent-up sap rushed into soft watery spray, and the trees became practically barren till the roots had been somewhat shortened. Neatness and uniformity in a fruit tree are doubtless very desirable, but the main object of the cultivator should be to obtain plenty of fruit of good quality, and to accomplish that result, there must not be an excess of pruning with either knife or saw. Cutting out large branches ought seldom to be necessary even in large standard trees, if the trees had been properly managed, and the thinning gradually attended to when the branches were small. There are two main objects sought to be obtained by pruning. The first is to build up a well-balanced, healthy, vigorous tree in as short a time as possible; and the second is, in conjunction with the first, to encourage the production of fruit-buds, so as to bring the tree into a bearing condition as early as is consistent with its permanent well-doing. A well-balanced tree can easily be secured by heading back at the autumn pruning any branches not sufficiently furnished; but fertility is best obtained without much use of the knife. Disbudding or thinning out the young growths early when the trees are producing too much soft spray, should be followed in due course by a gradually progressive pinching back through the summer,

and every tree should be treated separately, without any reference to its neighbours. Root-pruning is a valuable expedient to adopt in the case of trees excessively vigorous, that are not easily subdued by any other means; but with all trees of a manageable size, the object sought is best attained by digging the tree up carefully and replanting it. This usually gives sufficient check to moderate the growth, and bring the trees into a bearing condition. October and November are the best months for this operation, and also for the shortening back of a few of the roots of any large, strong-growing tree that may be too large to lift and re-plant. In nearly all cases, if half the roots be shortened back, the check given will have the desired effect, there being a danger of permanently crippling the tree should the roots be too severely pruned. In some cases opening a trench on one side of the tree at about 3 ft. from the trunk, and working under the ball so as to get at the roots that descend perpendicularly, will be sufficient; when those are severed, the hole may be filled up again and the soil made firm.

Protecting the Blossoms of Fruit Trees.

Cottagers do not generally pay much attention to the protection of fruit tree blossoms; but it nevertheless has an important bearing on the success of the fruit crop, and there are cheap and simple materials within the reach of all and easy of application, which are in the majority of seasons as efficient as more expensive and elaborate protections. In the case of pyramidal or espalier-trained Pears, Plums, Apples, or Cherries, small wisps of straw, tied here and there amongst the branches, allowing the long ends to float in the air, will be a great protection from spring frosts. Most people may have observed that trees standing on rather an elevated spot, where the least movement in the air would be felt, have escaped injury, when others, in apparently a more sheltered position, have suffered severely. In the same manner, on a frosty night, anything that tends to keep the air in motion round the blossoms protects them more than a covering affording an immovable shelter, and thus the light motion of small bunches of straw secured only at one end is beneficial. Rushes, the feather ends of Reeds, or the common Brake Ferns may also be advantageously employed in the protection of fruit blossoms; while small sprays of Yew or Spruce Fir, or any other evergreen tree or shrub, where available, will be useful in helping to secure a crop of fruit. I have here a south wall, about 100

yards long, planted with Peaches and Apricots, and for the last eight years all the protection the trees have received has been from small sprays of Yew being secured to the branches with the feathery ends projecting over the blossoms. We have trees of the same kind more heavily covered on other walls, but, taking the average of seasons, the produce of the trees protected with Yew sprays only does not compare unfavourably with that of the others. After a careful examination of the subject, I have arrived at the conclusion that if the trees be not weakened by over-cropping, a very moderate amount of protection will in the majority of seasons suffice; but unfortunately, every few years there comes a season when the weather is so severe that scarcely any protection short of a glass roof and a hot-water pipe will secure a fruit crop.

Destroying Insects.

In Nature there is a continual war going on; in fact, the whole natural system is one great battle-field, and the time and attention of the cultivator is much occupied in taking measures to destroy or circumvent his irrepressible enemies, the insects. When trees are in good health and in a thriving condition, they are not by any means so liable to the attacks of insects as those that are weakly, therefore the first object of the arboriculturist should be to encourage vigorous growth without grossness of habit. Trees that are weakened by neglect, over-cropping, or any other cause, are always more prone to be attacked by insects, and all trees in such condition should be well washed in winter with a strong solution of Gishurst Compound (8 oz. dissolved in a gallon of soft water), which strength of solution must not be exceeded; and if there be time, lime, soot, and sulphur may be amalgamated in something like equal proportions until the mixture assumes the consistency of paint, when it may be applied all over the branches with a painter's brush. Where the trees are numerous and the time limited, the mixture may be syringed on without the thickening ingredients, and in the spring, immediately the first fly or insect is discovered, dust the trees with Pooley's Tobacco Powder, and follow up the treatment once a week throughout the spring. Gishurst Compound, in solution the strength I have named, is intended for application in winter only, when the trees are at rest, its effect being to destroy the eggs or larvæ of all insects with which it comes in contact as well as to cleanse the bark from all Moss or other parasites that

tend to weaken the health of the trees; 3 oz. or 4 oz. to the gallon will be quite strong enough for spring or summer dressing, and may be used either by dipping the infested shoots into a basin of the mixture, or be syringed over the trees, and afterwards washed off with clean water. Solutions of Tobacco are also very effectual when applied in the same way; but in all cases where trees are much subject to the attacks of insects, there is generally a predisposing cause in the tree itself that has rendered the sap more palatable to its enemies. In the case of stone fruits extreme dryness at the root, over-cropping by unduly exhausting the trees, leaving the young wood too crowded, too great a reduction of the foliage, or anything, in fact, that has a tendency to lower the vitality of the tree, is usually the prelude to the presence of swarms of insects. And in our various measures for destroying insects, we should examine the previous history of the tree, and discover the cause or causes of its present unhealthy condition. The red spider has an utter abhorrence of moisture in any shape, and wherever it appears it is a sure sign that too little has been present either in the atmosphere or at the root, or perhaps both. When mildew attacks a tree, it furnishes a conclusive evidence of stagnation in the system of the tree, either arising from drought or from the directly opposite cause of sluggish root-action induced by the roots having penetrated a wet, cold soil. The American or Cotton blight may easily be dealt with by painting the trees over with paraffin oil, or the Gishurst Compound I have previously named will destroy it; and I have often cleared trees of it in a few minutes by turning on them a stream of clear cold water from the garden engine, and afterwards removing a few inches of the surface soil, and replacing it by fresh. Sulphur is the only effectual remedy for mildew, and may be applied either by dusting it on the affected parts through a muslin bag or puffed on by an elastic Tobacco-powder distributor, or it may be mixed with water and applied by the syringe. I have thus briefly glanced at a few of the common ills to which fruit trees are more or less subject, with their appropriate remedies, but in the majority of instances a liberal application of water would render other and more complicated remedies unnecessary.

Growing Fruit for Profit.

Where profit is the main consideration it is better to plant only such kinds as are known to do well in the particular neighbourhood, and there are a few kinds that may be planted

with safety everywhere. I would rather plant 100 trees each of Lord Suffield Apple, Williams' Bon Chrétien Pear, and Victoria Plum, than trust to a larger number of kinds. Many sorts that would be profitable when the trees were large yet do not bear much in a young state, and whilst the Grass grows the horse might starve. As a rule, early kinds of fruit pay the small grower better than late ones; they come earlier into bearing, they can be gathered and marketed without storing and without loss, and though undoubtedly late-keeping Apples and Pears are worth more than early kinds, yet there is great attention necessary in keeping them sound.

Fruits for Small Gardens.

APRICOTS.—Moorpark, Hemskirk.

APPLES.—Alfriston, Manks Codlin, New Hawthornden, Fearn's Pippin, Dumelow's Seedling, Court Pendu Plat, Lord Suffield, Waltham Abbey Seedling, Cox's Orange Pippin.

PEACHES.—Early Beatrice, Royal George, Alexandra Noblesse, Bellegarde.

NECTARINES.—Elruge, Violette Hâtive.

PEARS.—*Espaliers or Pyramids*.—Beurré d'Amanlis, Williams' Bon Chrétien, Louise Bonne of Jersey, Beurré de Capiaumont, Duchesse d'Angoulême, Beurré Diel. *For Walls*.—Glou Morceau, Marie Louise, Passe Colmar, Chaumontel. *Standards*.—The Hazel Pear will be found a most prolific and profitable kind.

PLUMS.—Rivers' Early Prolific, Green Gage, Goliath, Diamond, Victoria, Golden Drop, Damson.

CHERRIES.—May Duke, Late Duke, Bigarreau Napoleon, Morello.

GOOSEBERRIES.—Red Warrington, Champagne, Crown Bob, Whitesmith, Green Ocean, Roaring Lion, Early Yellow.

CURRENTS.—Red Dutch, Red Grape, White Dutch, White Grape, Black Naples.

STRAWBERRIES.—Keen's Seedling, Vicomtesse Héricart de Thury, Dr. Hogg, President, Sir C. Napier, Elton Pine.

RASPBERRIES.—Red Antwerp, Yellow Antwerp, Fastolf, Carter's Prolific.

GRAPES—*for Open Walls*.—Royal Muscadine, Esperione, Black Hamburgh, the latter in sheltered situations. *Vinery*.—Black Hamburgh, Foster's Seedling, Alicante, Buckland Sweetwater, Madresfield Court, Black Muscat.

I have designedly made these lists select, including only those I have found to succeed in widely different situations.

Vegetable Culture.

In the arrangement or laying out of cottage gardens several advantages will be obtained by growing the fruits and vegetables separately, that is, not intermixed as at present. In the first place there would be a saving of labour, as the groups or patches of fruit trees would not require the same amount of manuring or digging as should be given to annual crops of vegetables only. If the ground occupied by fruit trees had been thoroughly trenched and prepared before they were planted, after the first half-dozen years little beyond surface culture and cleanliness would be required. Another advantage possessed by this system of grouping would be the shelter it would give, for by planting the Apples on the windward side, and afterwards the Pears, Plums, and Cherries in rotation, the hardier trees would shelter the tender kinds, and fruit trees in spring often suffer as much from cold, cutting winds as from actual frost. There is a curious instance of this in our orchard this year. On the north side of the outer row of trees there is hardly a single Apple, whilst on the south side there is a very fair crop. This is entirely due to the wind last April, when the trees were in blossom. I believe the subject—separating the fruits from the vegetables—fully merits the serious consideration of all who contemplate making new gardens or renovating old ones. I should have no objection to low espaliers of Gooseberries or Currants, as they might be planted close to the walk and be utilized for edgings instead of Box or anything else equally unprofitable. It may be thought that there is a saving of space by growing fruits round vegetable quarters, but this is a mistake, and both the fruits and vegetables suffer by being intermixed; and this will be more apparent where the soil and climate are unfavourable, though of course espaliers are less objectionable than any other form, as they occupy less space and consequently shade less. Wherever the garden is irregular in shape—which many cottage gardens are—the fruit trees might be so arranged as to leave the plots for vegetables, either square or oblong, with the longest side facing the south where convenient, as with most crops there is an advantage in having the rows of vegetables run north and south, so that the sun may shine equally on all sides of them. Late Peas in very hot weather might form an exception to the rule, especially if several rows be placed side by side, which however is not the best way of growing them. The question as to the number and width of the garden walks

must in the main be decided by each individual occupier, who will no doubt be guided by the extent of his garden, which, if it be small, may simply be intersected by a path down the middle, or if large, a path round the outside in addition; but no more walks than are absolutely necessary should be made, and those should be well formed so that they may at all times be dry.

Trenching.

Deep stirring of the soil is one of the most important points in vegetable culture. There is no soil that cannot be improved by it, but its effect will be most noticeable on cold, heavy clays. In all such soils there is a vast mine of fertility locked up that only requires to be judiciously worked to have a marked effect upon the crop. During autumn and winter every half-hour that can be spared should be devoted to this work. Cleanliness and surface-culture of the soil are to a certain degree effective in the development of plants, but without deep stirring the land will not produce to the full extent of its capability. The past dry season has severely tried the crops of the shallow cultivators, there being no better test than a dry season to prove the advantages of deeper culture; manures in such cases, near the surface, do not produce their proper effect, and the plants in many instances, if they do not actually perish, are stunted and dwarfed for want of a deeper and firmer grasp of the soil. Moisture is one of the greatest essentials in the cultivation of succulent vegetables; and probably if our springs and summers were universally hot and dry, the importance of deeper culture, as one means of attracting and retaining moisture in the land, would be more generally recognized. At present, when a dry, hot summer comes, and plants are perishing from drought, it is found convenient to ~~man~~ ^{cast} our minds by throwing up all the blame of indifferent crops upon the weather, instead of trying to ascertain whether the system of culture adopted was the most suitable to our fields climate. In trenching land where the subsoil is very inferior, probably in extreme cases some injury may have resulted from bringing up too much of the crude inert soil from below to the surface. All clays are ~~rich in~~ ^{rich in} moisture in wet seasons, but they soon crack and part with it very rapidly in dry, hot seasons. Now as this may in a great measure be ~~improved~~ ^{improved} or counteracted by deep culture. The ~~drawings~~ ^{drawings} in wet seasons would be more effectual, and in dry weather the advantages of

deep culture would be twofold—there would be greater facilities for the plants striking their roots downwards, and the loose subsoil would encourage the ascent of moisture from the water bed below on the principle of capillary attraction. On wet lands, wherever artificial drainage may be necessary, it should always precede all other measures for ameliorating their condition. A test hole 3 ft. or so deep will readily tell if artificial drainage be necessary. If water stands in the bottom of the hole for any length of time at any season of the year, the drainage is certainly imperfect. In dealing with a bad subsoil, it will be better to try and improve it without bringing any to the surface. This can most effectually be done by removing the top spit as in bastard trenching, and then digging or forking into the bottom any fertilizing substance, such as manure, ashes, road-scrappings, or burnt earth—anything, in short that will tend to open up and disintegrate the crude mass. In this way a steady improvement will go on; air and water will percolate through it more readily, rendering its mineral constituents more soluble and suitable for plant food, and in the course of time portions of it may be brought to the surface, and still further improved by exposure to the frosts of winter.

Manures and their Application.

In garden economy the management of the manure-heap has a most important bearing upon profitable culture. All perishable substances have a certain manurial value, some for their mechanical effects, others for their stimulating properties. For heavy land ashes, lime, soot, and sand are exceedingly valuable; in like manner clay and marl may be profitably applied in considerable quantities to light land. It is best applied in the winter after the land has been trenched, left exposed all the winter to pulverise, and lightly forked in in spring before the land is cropped. A good dressing of clay is supposed to be beneficial for about ten years. The persevering, thoughtful cultivator will store up every bit of waste matter for his manure-heap, and it is altogether impossible to make a mistake in this respect, as everything that will readily decay may be added to the heap, and in proportion as the manures accumulate and are given to the land, so will the crops improve. The manure-heap should be formed in a hollow or pit near the pigsty, where everything that comes off the land or that can be gathered from the ditches or roads in the neighbourhood should be conveyed. When fermentation takes

place, if any bad smell arise scatter dry earth over it; this will arrest and absorb any effluvia or gas that may escape from the heap, as well as add to its bulk and value. I am assuming that every cottager who has at least 30 rods of garden will keep a pig, for the double purpose of eating up all waste vegetables and making manure. Liquid manure is especially useful for any crop that requires a concentrated stimulant, as it can be given just at the time it is required, and in the winter, if of no other use, it can be applied to stunted old fruit trees, taking the spread of their branches as a guide. Some years ago I treated some old Apple trees in this way several times during the winter, and the effect, as demonstrated by the produce, was marvellous. Asparagus beds, old Raspberry plantations, or old Gooseberry bushes would be much benefited by an application of liquid manure at any time when it is not required for other crops. In small gardens the pigsty can easily be screened by planting a row or two of pyramidal Pears or other fruit trees around it. The old idea of resting or fallowing land is now well-nigh exploded, experience having taught us that by the application of suitable manures, that is, by returning to the land as far as possible the same substances that have been taken from it, the earth is practically inexhaustible; hence, there is a manifest advantage in collecting the manure from as many sources as possible for the successful development of all kinds of vegetables, and special attention should be paid to the gathering in of what is usually called rubbish. All substances that do not readily decay, such as hedge clippings, prunings, &c., should be placed by themselves, and be occasionally charred as the heap accumulates. This can be done by setting fire to it on some dry day; when well alight place over it any other rubbish, such as weeds, &c., not too heavily at first, and gradually enclose the heap all round, so that the heat of the fire is confined within it. As the fire dies out the whole will crumble down into a black charred mass, which, when passed through a sieve to take out stones or rough pieces, will make a valuable compost for Onions, Turnips, or Potatoes, or for covering any small seeds in cold, heavy soils. If stored away in a dry place it will be found very useful in the winter for dusting over young plants of the Brassica family, Lettuces, &c. Salt is a valuable fertilizer, especially for dry, porous soils, and deserves to be more extensively used. Artificial manures are not much used in small gardens, but where there is a scarcity of other manures, and even where other fertilizers are plentiful, a slight sprinkling of

guano or superphosphate will often push a young crop through a critical period with safety. On some soils phosphates are more beneficial than ammoniacal manures. This will be found more especially the case when applied to old gardens, where the soil is rich from frequent manurings, but deficient in lime.

Seeds and Seed Sowing.

It is mistaken economy to buy cheap seeds: breed, or purity of strain—induced by constant selection—has a value in seeds beyond their mere germinating powers. Seeds may grow well, and produce a strong plant, and yet the crop be inferior for want of the necessary care in the selection of the stock. This is often lost sight of by the purchaser of cheap seeds. All seeds should be sown in drills, for not only is there a saving in the quantity used, but less labour will be required in cleaning and thinning the crop. Early sown crops should not be covered so deeply as those sown later when the sun's warmth has penetrated the soil, and raised its temperature. Large seeds, like Peas and Beans, may be covered about 2 in., smaller seeds, from $\frac{1}{2}$ in. to 1 in., making some allowance for the condition of the soil when sown, and the period of the year. For instance, when sowing Peas in December or January, unless the site is very warm or dry, it is better to sow in the surface soil than to lay the seeds in a wet, cold medium, where the plants, when they do struggle through, will be weak and spindly in their growth, and incapable of withstanding cold; whilst successional sowings, when hot weather may be shortly expected, will thrive better in deep drills or trenches, as by such a course they are enabled to obtain a greater amount of moisture for a longer period. Showers in summer always water the hollow places most; therefore when artificial waterings are necessary the moisture will be the more easily retained around the plants. Although it will be desirable to sow as nearly as possible on the dates that will be hereafter given (making some allowance for the climate of the place in its relation to latitude, and other special circumstances, such as shelter and elevation, which have in some instances a great influence upon the growth of early vegetables), yet, when dates are given for the planting or sowing of certain crops, it should be understood that they are always to be subject to the weather and the natural condition of the soil. During an experience of many years, I have always found that, by waiting and watching, and seizing a favourable opportunity when offered, a good seed-

time could generally be secured. In dealing with heavy land in a difficult season, I have derived great advantage from having a heap of light, rich compost, in which the charred remains of the rubbish-heap formed a considerable portion, to cover all small seeds. This is a matter that calls rather for forethought than extra labour, and the benefits derivable therefrom will be found to be great; when one has to deal with a heavy, tenacious soil, in an ungenial season, it is also a great consolation to the cultivator to feel that reliance may be placed upon every good seed growing, even supposing that extra trouble had been incurred. I have very frequently heard complaints of flower seeds not growing when sown in the open borders in spring, and the seedsman blamed for supplying bad seed, when really the fault has been in the way the ground has been prepared, and the seed has been sown. It would be far better to sow hardy annuals in August, for then the land is warm, and every seed will grow; but in March and April the soil is often wet and cold, and small seeds, if carelessly sown, will soon perish. If, however, the seeds be sown when the surface is dry and lightly covered with warm, sifted soil, there will be no difficulty in obtaining a good crop of plants. Sow only where the land is in good condition to receive the seeds, even if you have to wait a week or ten days for a favourable opportunity. Sow thinly, for when you have bought reliable seeds there is a waste both of seeds and time in thick sowing. Commence thinning the young plants early, and examine them two or three times before that operation is finally completed. During cold springs the young plants derive a good deal of shelter from near association with their neighbours, all that is necessary to guard against being overcrowded from thinning being too long delayed. A crop neglected in this particular never turns out well.

Rotation of Crops.

It is not an easy matter to lay down suitable rules for any regular system of cropping small gardens, and even when the plan is decided on it is still more difficult to carry it out where close and continuous cropping is the order of the day. It is not like cropping a farm on the four-course system, where every year's crop, like a piece of well-fitting machinery, is made to dovetail into the next; but there are certain general principles that must not be lost sight of, although it may not at all times be possible to carry them out. There are some crops—such as the Cabbage tribe, for instance—that may be

termed exhausting crops, and these should never be planted on the same land two years in succession. Others, again, such as Celery, Peas, and Onions, that usually have the land highly manured before planting, leave it in a much less impoverished condition, Onions having been successfully grown on the same land for many years; and in a garden where the Onion maggot is troublesome I believe there is an immense advantage in so doing, as from the frequent dressings of soot, and other remedies applied, the land becomes distasteful to it. For several years past I have grown Carrots on the same plot of specially prepared ground with a marked improvement in each succeeding crop, and I should recommend any one to try this plan where the maggot is at all difficult to eradicate. Potatoes have been in some gardens grown on the same land for many years. I do not recommend it as a good practice, but in small gardens it cannot always be avoided; but much may be done to mitigate any bad effects arising from this course by a frequent change of seed. Where deep culture is systematically carried out, and where the manure supply is ample, the constant and complete rotation of crops loses some of its importance. Still, even where these advantages are always present, no two crops of allied genera should follow each other in direct succession if it be possible by any means to avoid such an arrangement. I should strongly recommend all small occupiers to grow only early and second early Potatoes. There are good keeping kinds now that are fit to lift before the disease makes its appearance in most seasons, and when cleared off there is ample time to crop the land again with winter Greens of all kinds, including also a few Cauliflowers, Turnips, winter Spinach, and winter Onions. And if the land were in good heart there would be no necessity to dig or manure to prepare it for these crops. If cottagers planted Potatoes that ripened early, and that would keep sound for use during winter, their gardens would produce nearly double the amount of food in each season that they do at present. As a rule, in small gardens, there is too little variety in the crops grown, and there is too frequently a dearth of both Greens and salading. A small pinch of Lettuce seed, for instance, sown once a fortnight or three weeks from March to September will produce a regular and successional supply, and there would be no necessity, in arranging the spring cropping to leave land especially for this, as occasionally a few seeds might be scattered amongst other crops, such as Onions, &c., and in hot weather they will grow under the shade of fruit trees.

Watering and Mulching.

Even in the best arranged places irrigation has generally been looked upon as a matter of quite secondary importance; therefore it is hardly to be expected that cottage gardeners would realise its full value, though I believe that if a good supply of water in a kitchen or fruit garden could be easily applied it would double the produce; yet, unless there are facilities for doing it thoroughly, it would be better to divert the labour attendant thereon into a channel calculated to mitigate or counteract the effect of a long drought. Watering on the surface only, without giving sufficient to reach the main roots, is of very doubtful utility even when administered every evening; but if it can only be done occasionally it is worse than useless, because it tends to draw the roots to the surface, and when the water is withheld they perish. I have already referred to deeper culture as a ready means of enabling vegetables of all kinds to withstand drought, and mulching as a preventive is of the greatest possible utility. Half-decayed manure is the best material to employ, as it not only checks evaporation in a most efficient manner, but it also enriches the soil, as every passing shower carries the ammonia to the roots of the plants; it may either be spread on the surface about 2 in. thick, or, where its appearance may be objectionable, covered with loose soil; Grass, or litter of any kind may also be usefully applied in the same way. Whenever it is decided that any crop must be watered let it be done in the evening, and thoroughly; and if the surface cannot be mulched loosen it up with the hoe the next day. I like to water two or three evenings in succession, and then leave the crops unwatered for two or three days, at the same time using the hoe freely in situations where mulching is impossible.

Hoeing.

Next to the spade the hoe is on most soils the most useful implement in the garden. Hoes are made of various shapes, but two only need now be alluded to, viz., the Dutch hoe and the draw hoe; the former is best adapted for earth-stirring purposes or destroying weeds, and the latter for drawing drills or drawing earth up to the stems of growing crops. During fine weather, when the surface is dry, the Dutch hoe should be constantly in use, not only for the purpose of destroying weeds when they are small and easily eradicated, but also to keep the soil in a loose, friable condition, so necessary for the encou-

ragement of rapid growth in vegetables. The surface should be thoroughly broken up about 2 in. deep. It is a waste of labour to let the hoe slide over the hard crust as some men do, and then call such a mere tickling of the surface hoeing. When land becomes hard on the surface it parts with the moisture much more rapidly, as well as ceases to attract moisture from the atmosphere in the same way as a loose, open surface.

The Early Border.

As the season comes round there is even in the smallest establishments a desire for early Potatoes, Peas, Cauliflowers, Cabbages, salading, &c., and this is a want that may be easily administered to, for where no warm, sheltered border exists, a very small amount of ingenuity will improvise shelter and protection. After selecting the site, which should have a southern exposure, but need not be in any conspicuous position, trench the ground up well, adding as much good soil and thoroughly-decayed manure as can be obtained. A light, warm, porous soil is the most desirable for very early crops, and it should also be deep, while the surface should lie with a considerable inclination to the south so as to catch every ray of sunshine. Even where the soil, from its tenacity, is difficult to work, there should be no insuperable difficulty in altering its character in the case of the early border. If it cannot be made so good as desired in one season, by adding to it annually whatever comes to hand calculated to lighten and improve its staple, it will gradually increase in both earliness and productiveness. If any movable glass frames be available the progress of the crops will of course be much accelerated; but even without the aid of glass much may be done. There is a great deal of protection in a thin scattering of dry straw, and if the untidiness inseparable from its appearance be objected to, straw or Reeds can easily be made into mats that will last several years. Another way of utilising straw, Reeds, &c., for this purpose is to place them between a thin, light framework of laths; there are various forms and modes of doing this that will readily suggest themselves to the cottage gardener, so that I need not take up space by entering into particulars. Straw covers if kept dry when not in use will last several years if handled carefully: I have some that were made two years ago that are now in good condition.

Asparagus.

It is impossible to make land too good for Asparagus if large heads be desired, though those of medium growth are equally good in every respect except size. I have often heard the remark made by occupiers of a small plot of ground, that they should much like to have an Asparagus bed, but have been deterred from planting one on account of the expense. Of course it is possible for Asparagus beds to become very expensive, but it is by no means a necessary accompaniment, for it need not cost more to prepare the land for Asparagus than for Onions, or any other crop that requires high culture. It is not a crop that can be sown and gathered the same year, and to a certain extent that no doubt is a drawback; but even granting that three years must elapse before many dishes can be cut, if fairly treated afterwards it will continue to produce Asparagus in a satisfactory manner for many years with little cost. I know of some beds, not far from where I am writing, that are said to be nearly 100 years old, and the produce is still as fine as any grown in the neighbourhood. All things considered one-year-old plants are best to plant permanently. Conover's Colossal is the best variety, and as soon as the young growth is fairly above ground in spring is the best time to plant, although it may be planted any time up to the end of June if carefully managed. To raise young plants sow a small bed in March. If the seeds be of good quality 1 oz. or 2 oz. will produce plants enough for a moderate-sized garden; sow thinly in drills, 1 ft. apart, in well-pulverized land, and cover the seeds about 1 in. deep. When the young plants are 2 in. high, thin out to 4 in. apart; if carefully lifted, the thinnings may be planted elsewhere. During the following autumn or winter the land intended for the Asparagus beds or rows should be thoroughly deepened and enriched. A light, rich sandy loam, of an alluvial character, is the best soil for Asparagus, but any soil, if well treated, will produce good-flavoured heads. As a rule, the quicker the growth the better and more tender will be the produce; this remark, however, most assuredly applies to other vegetables, for all are produced in greater perfection in a rich, highly manured soil. Asparagus is a strong-rooting plant, and if planted thickly must be liberally fed, and, when crowded together in narrow beds, as is frequently the case, if not treated liberally, the soil is soon exhausted, and the produce becomes weak and poor; but give it as much room as the roots can occupy—taking into consideration that it is a perennial, the spread of whose roots and

branches will increase annually for many years if fairly tended—and this exceptional manuring for *Asparagus* need not be so rigidly insisted on. I contend that if other crops were crowded together so closely in proportion as *Asparagus* generally is, the result would be so unsatisfactory as to suggest the cause of the failure and its remedy at the first glance, but as *Asparagus* is a long-suffering plant, sufficient notice is not taken of it; and when plants die off in the thickly-planted beds for want of light and air, excessive planting is one of the last things suspected as in any way conducive to the shortness of the crop. Whatever may be thought or said to the contrary, *Asparagus* delights in moisture where the drainage is free; and in porous soils I should prefer planting in trenches in single rows 3 ft. apart and 1 ft. between each plant in the rows. Planting in either 3-ft. or 5-ft. beds on the surface, with 2-ft. alleys between, may be advisable on cold, retentive land, but then all cold, wet land should be drained and warmed by deep stirring before *Asparagus* is planted out. If the bed system be adopted, plant two rows of plants on the 3-ft. beds, and to compensate for the rows being too close together, give a little more space between the plants in the rows, say 15 in. from plant to plant; and if lasting prolific beds be desired, this space will not be found excessive for the healthy development of the plants: on the 5-ft. beds three rows might be planted. Spread out the roots carefully and cover the crowns about 1½ in. deep. It is especially important that the roots be not injured in lifting, nor yet exposed longer than is absolutely necessary. The best way would be to open the trenches first wide enough to give plenty of room to spread the roots out to their full extent, then take up the plants carefully and plant immediately; in this way the check would scarcely be felt; if the weather be dry, a good watering would be beneficial, as well as a mulching of manure about 2 in. thick; in fact, little matters of this kind, that involve but a small amount of trouble if done at first, will exercise a great influence upon the future welfare and productiveness of the crop. I have already said that *Asparagus* delights in moisture when the necessary porosity is in the soil. I have seen it well grown in the sandy marshy land of the Eastern coast, where the water—strongly impregnated with salt—could generally be found within 2 ft. of the surface. It also grows very well in the Fens, where the water is sometimes even nearer the surface, but in neither of those cases is the water altogether stagnant, as its

level is continually fluctuating, and it certainly does not follow that the same success would attend the planting of it in wet, cold, undrained clay. The subsequent culture consists in keeping down weeds, and applying rich top-dressings after the dead tops are removed in autumn. On porous soils salt is well-nigh indispensable, and may be applied in considerable quantities; 1 lb. to the square yard may be sown over the beds at any time during the winter when the plants are at rest; if given at any other time, half that quantity should be used. The old-fashioned plan of digging out the earth from the alleys and heaping it on the tops of the beds is very objectionable, for two reasons: first, because this annual digging out of the alleys injures, and in some instances destroys, some of the healthiest roots, and tends to restrict still further what is already too circumscribed; and secondly, the notion that *Asparagus* requires protection from frost has been long ago proved to be fallacious. It will be found to be much better practice to strew rich mulchings over both beds and alleys in order to encourage the roots to the utmost. If the plants have developed well, cutting may commence the third year after planting, and should be regulated according to the strength of the plants. It may sometimes be advisable when any row or bed shows signs of exhaustion from being too closely cut to give it rest for a season, accompanied by occasional sprinklings of guano in showery weather, and liquid manure may be administered with good effect. The third week in June is the time fixed by many growers for discontinuing cutting, but everything depends upon whether the position be an early or late one; by observing this and carefully noting the strength and condition of the plants, the cultivator will be prevented from falling into error. Those who are in favour of white *Asparagus* must of course blanch it in some way, and the plan usually adopted in this country is to cover the beds deeply with light, rich, sandy soil. The better plan, however, is to allow it to grow 6 in. above the ground-level, and then cut close to the surface. In this way the *Asparagus* gets its true flavour and is nearly all eatable, and there is no danger of injuring with the knife the buds just making their appearance.

Seakale.

Like the *Asparagus* this is a native plant, yet it is only in the gardens of the wealthy that its good qualities seem to be rightly appreciated. Its productiveness and easy cultivation

ought to recommend it to any cottager on the look-out for a pleasant wholesome vegetable in the months of March and April, when other vegetables are both scarce and inferior. A sufficient number of plants to stock a fair-sized garden will be raised if 2 oz. or 3 oz. of seeds be sown in March on light, rich land. The drills should be 2 in. deep and 18 in. or 2 ft. apart. Thin out the young plants, when they have made three or four leaves, to 1 ft. apart in the rows. The thinnings may be planted elsewhere if carefully drawn in showery weather. Cuttings of the roots about 4 in. in length, planted the same distances apart, make good plants in due season, and some cultivators prefer this plan. Whichever plan is adopted, deep, clean culture, with sufficient space for the development of the foliage, is the best way to lay a foundation for the production of strong crowns on which depends the future crop. A sprinkling of salt ($\frac{1}{2}$ lb. to the square yard) will be beneficial in June. During its early growth on some soils the Turnip fly is troublesome, and should be kept in check by frequent dustings of lime or soot, and frequent stirrings of the soil. Remove all foliage as soon as it dies down in autumn, and cover the rows of crowns with litter or leaves, ashes, sand, Cocoa-fibre, old tan, or light, dry earth, its object being to check the radiation of what remains of the sun's warmth in the ground, and to blanch the produce, as it grows early in the spring; and the earlier this is put on in autumn the earlier will the crowns push through, and the produce be fit for gathering. The young tender growth is ready for cutting when about 6 in. long; the longest (which may easily be seen by the upheaval of the blanching material) should be cut first. Do not cut any portion of the old crowns, as there are latent buds that will push a good second crop later on. When all the produce is cut, the blanching material may be drawn back towards the centre of the space between the rows, and lightly forked in. In the course of a couple of years the accumulations thus formed can be used for purposes of blanching, if of a light friable nature. Old roots frequently throw up too many shoots in spring, after the produce has been cut; those should be thinned out to two or three at the most, so as to give room for the foliage, as the size of the future crowns depends upon having well-developed leaves. During summer all flowering shoots should be removed when young, except a few seeds may be required. Those young shoots form a wholesome dish, either peeled and tied in bunches, and cooked like Asparagus or simply as Greens. Under good cul-

ture, roots strong enough for bearing, where sown, or for forcing may easily be grown in one season, and Seakale is one of the few vegetables that is really improved by forcing. There are various ways of forcing Seakale; the best and cleanest is to make a hot-bed that will produce a temperature in the frame between 55° and 60° . The frame may be simply a few rough boards nailed together and covered with a shutter or mats, as of course light and air must be excluded. The roots may be placed in the frame about 3 in. apart, and all the interstices filled up with light, rich soil. A Mushroom-house, or any shed or building from which light and air can be excluded and a genial temperature maintained, will answer the purpose, but if the temperature exceeds 60° , the growth will be weak and spindly. Another way of forcing is to plant the roots or seeds in patches 2 ft. or 3 ft. apart, three plants in a patch in a sort of triangle, and so arranged as to distance from each other that one pot will cover each patch. Of course, proper Seakale pots, with movable tops or lids, are the best, but large flower-pots, or old boxes or tubs, will do for make-shifts. A certain number of patches could be covered with warm manure and leaves, using a large proportion of the latter; if too much rank manure be used the bed may get too hot, and the flavour of the Seakale be spoiled. By covering a few fresh pots every fortnight or three weeks a succession can easily be kept up through the winter, and the late spring crop may be simply blanched where grown without forcing. A plantation of Seakale, when only slightly forced, will last many years without renewal, and need not be planted in a conspicuous place.

Mushrooms.

There is no reason why every one who can obtain fresh stable manure should not have a supply of Mushrooms at any season of the year, except perhaps during the very hottest period of summer, when they are so often infested with maggots as to be unfit for use. Where short manure or droppings cannot be obtained in sufficient quantities, tree leaves, tan, or long litter may be mixed together to form the foundation of the beds, with about 6 in. or 8 in. of horse droppings on the top for the spawn to work in; I have had very prolific beds made in this way. Given, good spawn and the requisite materials to produce a regular heat, and good Mushrooms may be produced in abundance either in cellar, shed, or in the open air. If grown in a shed there will be a saving of labour

for winter work if the shed be artificially heated so that a temperature of 55° or so can be maintained. An underground cellar is a desirable place in which to propagate Mushrooms, either in winter or summer, as the temperature is usually so regular and steady. Wherever grown the temperature of the bed must not be allowed to fall below 55° at any time. Of course the first month after the beds are made, or during the time the spawn is running, if the beds be properly made and of the requisite thickness, a temperature of 75° will easily be maintained. I will just briefly glance at the several ways of preparing the materials for forming the beds. If short horse manure alone be used that from corn-fed horses is the best; after shaking the long straw or litter from it, it should be placed under cover or sheltered from heavy rains in some way, and gently fermented so as to allow some of its rankness to pass off, as well as to reduce the moisture it contains. It should, however, never be permitted to heat violently, and to prevent this it should be turned over every other day for about a week or ten days, well shaking and mixing it together, after which it will be in a fit condition to make up. Another way of preparing the materials, and one that I have often practised, is to add about one barrowful of fresh loamy soil to every five barrowful of short manure; thoroughly mix the whole together, leave it in a heap for a day or two till it gets warm, then shake it all over again and make up the bed. The fresh soil checks any tendency to strong heat, and this enables the bed to be made up earlier than if of horse-manure alone. It also absorbs the ammonia, that would otherwise be evolved in the frequent turnings and intermixings; beds made in this way are both prolific and lasting; and this is the plan I should recommend any one not well versed in Mushroom culture to adopt, as there is less danger of the beds overheating after being made up. The proportion of soil may vary somewhat, according to the freshness of the manure, for when fresh from the stable, a little more loam may be used. If it has laid in a heap and been partially fermented, less may be added. This detail, however, must in some measure be left to the judgment of the cultivator. As regards thickness or depth of material in the beds, nearly everything will depend upon the position the beds occupy and the season of the year. In all heated buildings 1 ft. in depth will be ample when made thoroughly firm, but for winter beds in an unheated building or in the open air 2 ft. will not be too much, and, in addition, warm coverings of litter will also be necessary. The coverings next the bed should be occasionally

changed, as when it becomes damp the spawn may work out of the bed into it and exhaust itself prematurely. In making the beds it is essential that they be constructed firm and solid, as not only does the spawn work better in firm material, but the heat will be more regular and lasting. The best way is to make the bed up in layers, having each layer thoroughly firm before the next is added. Open-air beds are best, constructed in the form of a span-roofed ridge about 3 ft. or so wide and from 2 ft. to 2½ ft. high, made as firm as possible. In summer the beds may be in a trench in a shady place, or in an empty turf-pit, as in hot weather there will be less difficulty in keeping them in an even state as to moisture without saturating them too much with water. When the beds are made, insert a stick about the middle, pushing it down about 1 ft. in the bed; this stick will have to be drawn out and examined daily, and when the heat declines to about 80°, pieces of spawn may be inserted about 9 in. apart all over the bed. The bricks of spawn should be broken up into pieces about the size of a Walnut, or a little larger, and just buried under the surface of the bed, and the bed afterwards trodden or rammed down firmly. If there be no danger of the heat increasing, the bed may at once be soiled, but it is best to wait a day or two to make sure. About 1½ in. of fresh loamy soil should be spread evenly over the surface, and beaten as firmly as possible with the back of a spade; finish off with a light sprinkling of water from a rose pot, and draw the back of the spade over again to leave a smooth even surface, in order to facilitate the growth of the Mushrooms. The trial-stick should be retained in the bed, and if the heat fall too rapidly, a covering of hay or litter should be placed on it, having previously thrashed the hay in order to dislodge all seeds. The heat can afterwards be easily regulated by occasionally examining the stick, and increasing or reducing the covering, according as the heat varies in the bed. The average time for the appearance of Mushrooms is about six weeks from the time the beds are spawned. Those beds made in autumn usually succeed best, and if several beds can be started in September and October, and earthed up in succession, they would give a continuous supply till the spring is far advanced. In all cases the beds should be spawned when the heat declines to 85° or 80°, as it requires a higher temperature to excite the spawn into growth in its early stages than for the production of Mushrooms. I have already briefly noticed the use of other materials besides stable-manure for the formation of Mushroom beds; and

there is no question that good Mushrooms can be grown in anything that will produce and maintain a durable and steady heat. Of course there is no necessity to seek for any material better than stable-manure where it can be obtained in sufficient quantities, but, yet if it be scarce, no one need be afraid to use tree leaves, tan, sawdust (if from green wood), or long litter, either separately or all mixed together, to form the main part of the bed, with a few inches of horse droppings on the top, in which to insert the spawn. Mushroom beds must be carefully watered, and it is always a good plan, even when the beds are warm enough, and the spawn running freely, to keep a thin covering of hay or clean straw on them to check evaporation. Beyond the slightest sprinkling there ought to be no necessity for watering till after the beds come into bearing. If grown in any building above the ground-level syringing the floors and walls occasionally will maintain a moist atmosphere. If in a cellar or any place underground, this even will scarcely be requisite, as in such places there is little or no fluctuation in the temperature or moisture of the atmosphere. After the beds have been bearing some time and show signs of exhaustion is the time to give them the first application of clear liquid manure heated to a temperature of 75° or 80° , which will put new life and vigour into the beds again, and as soon as the watering is finished they should be covered up with long litter or straw, in order to retain the warmth. It often happens in pulling old beds to pieces that enough good spawn can be secured to supply another bed, and this may always be relied upon if covered up and kept dry and used in the course of a week or two.

Vegetable Marrows.

These are plants the culture of which might be profitably extended in small gardens, not only for use as vegetables in summer, but also when fully grown and ripe to form a preserve for tarts and puddings during the winter. Where land is scarce they may be planted near to and trained over the faggot-heap, or up the sides and over the roof of any low building with a favourable aspect. Early in May the places for the hills may be marked out; an open, exposed position is the most suitable for the main crop. A warm corner may produce a few early Marrows, but mildew will attack the plants when hot weather comes, unless the water-supply is unlimited. Open holes for them from 6 ft. to 8 ft. apart, and 3 ft. in diameter by 2 ft. deep; fill up with anything that will ferment, and furnish

a slight bottom-heat in which to start them; and that will be sufficiently decomposed when the plants commence bearing and require support, to supply them with food. There is nothing better than the manure from a pig-sty or cow-house, and this may be eked out with weeds, short Grass, or trimmings of any kind that can usually be met with in every garden. When the holes are filled in level with the surface and made firm, the earth should be formed into a hill with a hollow in the centre, into which the plants or seeds should be set. If there be a frame or pit, the seeds may be sown in small pots about the middle of April, and planted out about the middle of May. It is hardly advisable to sow them in heat, the probable effect of which treatment being to draw the plants up weakly, unless they are removed to a cool frame as soon as they are up. There is a far better prospect of a crop from strong, vigorous young plants raised in a cold frame than from larger plants raised in heat. Where there is no convenience in the way of glass the seeds may be sown on the hills—three seeds to each hill—about the first or second week in May, and an inverted flower-pot placed over them. When the young plants break through, the flower-pots must be removed in the daytime and replaced over them at night until all danger from frost is over, until they become too large to be so covered. There are other simple contrivances that may easily be improvised to shelter in spring not only Vegetable Marrows, but many other subjects requiring protection. When the plants begin to run they should be pegged out, and the strongest shoots occasionally stopped, so as to fill up all vacant spaces. It is an excellent plan to mulch the ground occupied by the Marrows with long littery manure, or anything that will keep the earth cool and moist—which treatment will save labour and materially benefit the crop. In dry weather copious waterings, with occasional supplies of liquid manure, will be very serviceable to the plants; they will add much to their productiveness, and discourage the attacks of mildew. But there will be less necessity for this if the ground can be heavily mulched. The Long White Vegetable Marrow is the best and most profitable kind to grow. When used as a vegetable it is best cut before it gets too large. Later on in the season two or three may be left for preserving for winter use, but the large ones rob the plants more than the same weight of small ones do; therefore they should not be allowed to attain a large size till the plants are very strong and well able to support them.

Tomatoes.

I have a vivid recollection of tasting my first Tomato, and the disagreeable impression which it produced. Many years have elapsed since that event occurred, and I have now acquired taste for Tomatoes either cooked or raw, and no doubt this has been the experience of many besides myself. The difficulty often experienced in inducing Tomatoes to ripen in the open air is a drawback to their culture in small gardens, and this, with the ignorance of cookery so prevalent amongst cottagers, prevents any fresh introduction from having justice done to it, either in the way of proper culture or cooking. In warm countries Tomatoes have a richer, sweeter flavour than with us, and there is a marked superiority in the fruit grown under glass over that produced in the open air. A dish of good, well-ripened Tomatoes is superior, in my opinion, to most of the tropical fruits grown in hothouses, in the way of Bananas or Guavas; of course in this category I do not include Pines. Tomatoes are slowly but surely making their way, and they certainly deserve a place in even the smallest garden. The warmest, sunniest corner should be allotted to them, for although I have proved they will produce and ripen a few fruit in almost any aspect, yet the flavour is inferior compared with that of others ripened in a sunny spot. A very common error in Tomato culture is the practice of cutting off nearly all the foliage under the idea that the fruit ripens better if fully exposed to the sun and the air; those who adopt this theory must suppose that the leaves perform no part in the elaboration of the juices of the fruit, which is, I know, contrary to fact. Tomatoes will ripen and colour without foliage, but the flavour is far inferior to those where the foliage on the main stem is left almost intact. Of course, all young growths should be pinched back after the crop is set and swelling. It is better to be content with a moderate crop of well-matured fruit than to allow quantities of small late fruit to remain on the plants that cannot be brought to perfection. It is better in small gardens, where there is no hot-bed in spring, to grow only early kinds like the Orangefield; but with a hot-bed at work in February all difficulties vanish. Sow the seeds about the end of February or early in March; from a dozen to a score of plants will produce sufficient for a small garden. Sow thinly in a 48-sized pot in light, rich, sandy soil, and place the pot on the hot-bed near the glass. When the young plants are large enough to handle, prick them off either singly into 60-sized pots, or two or three round the sides of 48-sized ones. The soil before being

used should be placed in some warm situation to raise its temperature. Under any circumstances never use cold, wet soil for potting off plants from a hot-bed. The young plants should be returned to the hot-bed again to be grown on close to the glass, but not absolutely to touch it. About the end of April shift them to a cold frame, to harden off preparatory to planting out in May, from the middle to the end of the month, according to the earliness or lateness of the situation. If a portion of a low south wall can be obtained, plant them there, and if confined to a single stem, 18 in. apart will be ample space. Should they be stopped early in their growth and two or three breaks encouraged, then more space must be allowed; in any case all young shoots from the main stem, besides the leader, should be rubbed off when $\frac{1}{2}$ in. long. After the development of the first bunch of flowers pinch the leading shoot one leaf or joint beyond the cluster. One shoot from the joint below the cluster of flowers may be encouraged to take the lead, and this will in due course form a second cluster. The side branches, if any, may be treated in the same way, until as much fruit as the plant ought to carry is secured; then all young growths should be regularly pinched off close to the main stems, and no foliage encouraged or allowed, except that on the main stem only; if the clusters of fruit be set thickly, thin so as to give room for development—the thinnings may be used for pickling. If there be no hotbed, delay the sowing till the end of March or beginning of April, place the pot in a sunny window, with a square of glass over it, till the young plants appear, when they should be potted off, and grown on till the middle of May. The seeds may also be sown in the open air, in a warm spot, at the foot of a fence or wall, and the same attention must be given to thinning, pinching, and training, as for the plants forwarded in heat. If there be no wall or fence on which to train them, they should be fastened to stakes, or they will thrive very well planted against espalier rails or wires, and trained up vertically. In the early stages of their growth, a good soaking of water will be beneficial occasionally, if the weather be dry; but mulching may in some measure render this unnecessary. Where, for the sake of economising space, several plants have been grown on in a pot, they should always be divided and planted out separately.

Globe Artichokes.

Although these are not generally grown in small gardens I include them here, as they may be made to serve a double purpose, being both ornamental and useful. A row may be planted to divide the floral from the culinary department, or in some other position that will give due prominence to their ornamental appearance, and at the same time permit of a few dishes of a choice kind of vegetable being obtained. The ignorance of the mode of cooking such vegetables in small households is often the greatest drawback to their introduction, but I hope to add a few plain notes from a most reliable source upon that subject by-and-by. Globe Artichokes will succeed well in any deeply-stirred, well-enriched soil, and they are not nearly so tender as the mode of culture in vogue with our fathers would lead us to expect. A little dry litter or Fern placed round each plant before frost has set in is all the protection they need in most situations; ashes or burnt earth packed round the collars of the plants will answer the same purpose. New plantations are best made from offsets taken from old stools in March or April. If a piece of the old root can be taken off with them they will establish themselves in less time, and some of them may produce a few heads in autumn. Plant in rows 3 ft. apart and every year afterwards until it is necessary to replant, all the weak offsets or shoots that spring up round the sides of the main stems should be removed in spring, as they do not produce any flowers, and only tend to weaken the plants. The undeveloped flowering heads, when getting firm at the base, are the parts usually eaten. The young leaves that usually shoot up towards the end of August are sometimes tied up and blanched like Cardoons. This, however, is not often practised, except in the case of old plants which it is intended to destroy. All stems from which the heads have been cut should be removed at the same time, as they only tend to exhaust the plants if allowed to remain. There are several varieties, but the kind that finds most favour in English gardens has a dwarf, robust habit, bearing large, globular flower-heads, the points of the scales encircling which are turned inwards and tinged with purple. It is hardly advisable to allow them to occupy one position too long, as they are strong-rooting plants; and when the soil is exhausted they quickly show signs of deterioration, both in the size of their globular flower-heads and in the loss of their perpetual bearing habit; but the latter fault can in some measure be rectified by severely thinning out the flower-stems when they

first appear, so as to induce them to throw up a succession. Salt sprinkled amongst the plants during the spring months will be exceedingly beneficial to them. Mulching also, with occasional doses of liquid manure, will encourage the production of very fine heads.

Potatoes.

The advantages of relying chiefly upon such Potatoes as can be lifted and stored by the end of July or beginning of August, has this season (1876) been self-evident, so far as the Midland Counties are concerned; for, amongst late kinds, three-fourths of the crops are so bad as to be unfit for pigs. Crops that were lifted in October, and which then appeared sound, soon became a mass of rottenness; but fortunately the second early kinds produced abundantly, and amongst them there is not much disease. It is, perhaps, of little use mentioning kinds, as everybody has some favourite sort. With us the following have been good, and mostly free from disease, having been lifted before any symptoms of it appeared, viz., Ashleaf, Myatt's Prolific, Early Rose, Snowflake, Late Rose, Fenn's Bountiful, Early Market, Rector of Woodstock, Early White Kidney, Porter's Excelsior, and Wheeler's Milky White. What is really wanted (and Potato raisers should bear this in mind) is a race of good keeping Potatoes that will complete their growth by the end of July, so that they may be lifted, dried, and stored before the disease appears. By planting on the driest pieces of land, and as early as is consistent with safety from frost, by carefully selecting and frequently changing the stock of seed, and by using forcing or stimulating manures to push on the crop during its short season of growth, something may be done to mitigate the disease; but, after all, the main remedy will probably be found in growing early-ripening kinds, by giving them plenty of space, and fairly liberal treatment. I have never found much advantage from planting in poor land without manure. I formerly had an idea that medium-sized whole Potatoes were best to plant, but recent experiments have shaken my confidence in planting whole Potatoes. I believe that large ones, cut into single eyes, will furnish a better return than planting whole tubers; moreover, and this is of some importance, the crop will be fit to dig at least a week earlier, a circumstance for which a reason is not far to seek, inasmuch as one strong stem from each set is better than a cluster of weakly ones; the former will produce on the average from four to six good-

sized tubers, whilst the latter will yield a host of small Potatoes, in addition, perhaps, to one or two good-sized ones. The crown eyes are better and more prolific than those produced on the sides of the tubers. Seed Potatoes should never be stored in large heaps; the best way is to lay them out thinly in shallow boxes or on shelves in some building from which frost is excluded. Where space for this cannot be afforded, the heaps should be as small as possible, and should be frequently turned over to keep growth in check. A heap of Potatoes, even if small, will generate warmth, and if not moved occasionally will grow, and that will weaken them for seed purposes. It is not advisable to cut the sets more than twenty-four hours before planting time or they will shrivel, and the growth will be thereby weakened. It is a good plan to lay the tubers out thinly somewhere to sprout, and then to select and cut out the strongest eyes only for planting. A little extra care in this way will not be altogether labour or time lost. All land intended for Potatoes should be worked and exposed to the weather as much as possible during late autumn and winter; heavy land might be manured at the same time, and be thrown up into ridges. If these be $2\frac{1}{2}$ ft. wide, in spring the Potatoes may be laid in the hollows, and the fresh pulverized soil levelled down over them; light sandy land should be treated somewhat differently, for if too much exposed and dried either by the sun's warmth in summer or dry frosty winds in winter, it loses some of its fertilizing properties. In such cases the manure, which should be thoroughly decayed, should be placed in the drills with the sets. Those kinds of Potatoes that make short, robust tops, are best for small gardens, as they may be planted comparatively close together. All those which I have named produce dwarf tops, but none except the earliest kinds should be planted at a less distance than $2\frac{1}{2}$ ft. between the rows, as this distance leaves space for them to have a second earthing up, leaving a clearly-defined ridge and rather a deep furrow between, which on heavy land (especially if the season be wet) is a decided advantage. What is called the Potato disease is pretty clearly proved now to be a fungus called *Peronospora infestans*, and this plan of giving plenty of space for a good ridge of soil and a deep furrow, helps to drain the water off freely and in some measure retards the progress of the fungus. When whole Potatoes are planted the number of eyes had better be reduced by cutting out all except those in the crown. The best time to plant the main crop is about

the end of March or beginning of April. In very late situations, much exposed to spring frosts, the planting might be deferred till the middle of the month of April, but that is quite late enough for any situation, *i.e.*, if the crop is to be fit for lifting before the disease makes its appearance. If a few Potato-tops push through the ground before all danger of frost is over, it is an easy matter to draw a little soil over them. In small gardens, a system of culture commonly practised in Ireland, called the "lazy-bed plan," is well worth a trial, especially in the case of early crops on heavy damp land. It consists in laying the land out into beds about $4\frac{1}{2}$ ft. wide, with 2-ft. alleys between them. The land in this case should be well worked in winter, so as to have it in a thoroughly pulverized condition at planting time. After the beds are marked out the sets should be placed eye upwards, from 12 in. to 15 in. apart, according to the kind. On the beds a good sprinkling of thoroughly decayed manure, including a little guano or superphosphate if thought desirable, should be spread over the tubers. A mixture of hot-bed or stable manure, burnt earth, soot, lime, and the decayed or charred refuse from the rubbish heap will be found to be a good compost for Potatoes. After the manure has been applied, sufficient earth should be taken from the alleys to cover the tubers 6 in. deep. When they are 6 in. high, another spit may be taken from the alleys (if there be depth sufficient) and placed amongst and around the Potato stems. The advantages of this plan are the deep alleys between the beds, which thoroughly drain them; and as the Potatoes have a greater depth of warm dry soil in which to grow, the disease has a less injurious effect upon them. Under this, however, as under all other systems of culture, the surface must be freely loosened either with hoe or steel fork until the Potatoes are fit for earthing up.

Parsnips.

These require a deep, well-pulverized soil, in which the manure has been deeply buried, or one that has been so highly manured for a previous crop as to require none. If freshly manured, the roots will be coarse and much forked. The Hollow Crowned and Student are the best varieties, and of these seed should be sown in drills $1\frac{1}{2}$ in. deep early in March; the drills should be 15 in. apart, and the young plants, when large enough, should be thinned out to 6 in. asunder. For this, as well as for all other growing crops, frequent stirrings

of the surface of the soil between the rows are exceedingly beneficial. The roots keep best in the ground, or if taken up they should be stacked in a dry place in earth or sand.

Carrots.

The Early French Horn should be sown in February on a warm border in drills 1 in. deep and 9 in. apart. It is not necessary to thin this crop much, as the moment the young plants are as large as one's finger, the largest may be drawn for use. The main crop of James' Intermediate and Altringham may be sown early in April on land that has undergone thorough cultivation. If manure had been used it should have been of the lightest possible description and dug in some distance below the surface. In places subject to the maggot, dress the land in winter with salt, lime, and soot. The two latter may be employed liberally, but salt must be used more cautiously— $\frac{1}{2}$ lb. to the square yard will in most cases be sufficient. I have occasionally used much heavier dressings, but we ought to know something of the character of the soil on which we are operating, before applying it in excessive quantities. Gas lime is an excellent material with which to renovate old gardens in which insects are troublesome; it may be applied on the surface now and be worked in by-and-by. It is a powerful stimulant and should be used cautiously. On heavy land, where there is a difficulty in obtaining good Carrots, after the ground has been got into good condition in April set out the rows from 13 in. to 15 in. apart, then make holes with a crowbar 6 in. asunder along the rows; let the holes be 15 in. deep and 3 in. in diameter at the top; fill them up with any light, rich compost (two or three barrowsful will go a long way), drop three or four seeds in the centre, and cover lightly. When large enough to select the strongest, thin out the young plants to one in each hole. This is an excellent way to secure a good crop of clean, well-shaped roots, and the work is not so formidable as it looks. Carrots should not remain long in the ground after their growth is completed, which, in the case of the main crop, will be by the middle of October. The best way in which to preserve them in good condition is to place them in small heaps in the open air, and cover with straw and soil in the same way as Potatoes are pitted. Sow another bed of early French Horn about the end of July to stand the winter in the ground, and be pulled young, fresh, and sweet as required. In case of severe frost scatter over them some dry litter, which should remain while the hard weather lasts.

Salsafy.

This root has, when cooked, a strong flavour of oysters, so much so as to have acquired the name of the Oyster Plant. It is not much grown in small gardens, but a row or two of it will not occupy much space, and will furnish occasionally a desirable change in the way of vegetables. The roots are very apt to grow forked unless the manure be buried deeply. The best way is to open a trench 18 in. deep, place the manure at the bottom, return the soil, and sow the seeds in a drill $1\frac{1}{2}$ in. deep, exactly over the manure so as to tempt the roots to run straight down to it. The drills may be 1 ft. apart, and the plants should be thinned out to 6 in. asunder. The first week in April is time enough to sow Salsafy; which, if sown too early, is apt to run to seed. The roots keep best in the ground in the same way as Parsnips; and, if a little dry litter be placed along the rows on the approach of frost, they may be lifted as required.

Turnips.

On some soils, raising very early Turnips is a difficult matter, as, when the young plants have passed through the vicissitudes attending their early existence, unless carefully managed, they may run to seed at the very time when they ought to be ready for use. Under these circumstances, unless the land be peculiarly well suited for Turnip-growing, April will be early enough to make the first sowing. All the previous instructions respecting the preparation of land for roots will have special weight in this case, with this addition, that inasmuch as Turnips form their bulbs on the surface of the land, rich surface-dressings of which charred or burnt refuse forms a part will be beneficial to them. A sprinkling of superphosphate applied at the time when the seeds are sown will also make its presence known by pushing on the crop, and should never be omitted where the fly is troublesome. Sow in drills 1 in. deep, 1 ft. apart, and thin the plants out to 1 ft. asunder in the rows. During hot weather, for the successional sowings, the drills should be drawn a little deeper, and they should be thoroughly soaked with water before the seeds are sown. If the latter lie too long in the land, the plants always come patchy and weakly. As regards varieties, there is no better all-round Turnip, for either large or small gardens, than Veitch's Red Globe, and especially for an unfavourable soil in a dry season. Cattell's Silver Ball is a very handsome Turnip for early sowing, and the Chirk Castle

Black Stone is very hardy, and may be sown towards the end of July or beginning of August for standing the winter. Where a succession is required, it is better to sow a small bed every three weeks than to sow a large one at long intervals. When the early Potatoes are lifted, Turnips may be sown immediately, without much preparation of the land beyond a sprinkling of some artificial manure.

Horseradish.

This, being difficult to kill or eradicate, is generally relegated to some out-of-the-way corner, and seldom has justice done to it in the way of cultivation. There is always a demand for it, and in deep, light soil, if well managed, it would prove a paying crop. The land should be deeply worked, and if manured the manure should be buried deeply. Make holes with a crowbar in rows 18 in. apart and about 12 in. or 15 in. asunder in the rows; the holes should be at least 16 in. deep, and the sets should be dropped into them. The latter should consist of stout pieces of roots, 3 in. or so long, either with or without the crown bud, and the holes should be filled up with fine soil or sifted ashes, the latter being preferable. Another plan is, when taking up the crop to save all the long, slender roots that are not large enough for use, to trim off all the small fibres, make holes with a crowbar of sufficient depth, and at an angle of 45° or so, and drop the roots in so that the crowns are beneath the surface, filling in with ashes or burnt earth. Planting the roots in a slanting direction enables the cultivator, if he feel disposed, once during the growing season to take the crown of leaves in his left hand, and draw the root up so that the pressure is brought to bear in the direction in which it has been planted; the strong fibres that generally start away just under the surface may be cut off, and the crown of the plant returned to its former position and pressed down with the foot. Plant any time in March.

Jerusalem Artichokes.

One cannot help wondering that a plant so prolific, and that can always, under all conditions and circumstances, in any kind of soil and with little attention, be relied on to produce a crop, should have received so little attention as this Artichoke. However, such is the fact; and, except in the gardens of the wealthy, it is almost unknown. They might, however, have a trial, for although probably their peculiar flavour would

not suit every taste, yet they might be made into soup or cooked in various ways, and would furnish in the winter a desirable change of vegetables. Doubtless many have condemned them or refused to grow them without really knowing what they are. Plant the sets like those of Potatoes in March either with or without manure, according as the land is good or otherwise, or whether large or small tubers are required. Plant in rows 3 ft. apart, and 12 in. asunder, and 6 in. deep. All that is necessary afterwards is to keep down weeds till the tops get fairly into growth. About July the ends of the shoots may be shortened a little to keep them from flowering and within bounds, and strengthen the crop. Some leave them in the ground altogether, and just dig a few when required. This, however, is a bad practice; they should always be lifted before growth begins. The best-shaped tubers should be selected for use and stored like Potatoes; the others should be reserved for seed.

Onions.

Manure and trench the land in autumn or winter; if heavy, throw it into ridges, but if light, leave it flat. In February spread over the surface of the beds about 3 in. of thoroughly decayed manure or rich compost, including the charred refuse from the rubbish-heap; fork it lightly in, so as to mix it with the surface-soil. In March, when the surface is dry, tread all firm, rake level, and draw drills 1 in. deep and 8 in. or 9 in. apart, or more if large bulbs of Onions be required. Sow the seeds evenly and thinly; tread them in, and draw the back of the rake over all leaving a level surface. As soon as the young plants appear, choose a fine day to stir the soil amongst them, and follow this up as often as time can be spared during the growing season. When large enough thin out to 3 in. or 4 in. apart; this should be done in showery weather, as they come up better and without disturbing the roots of those intended for the main crop. Salt in small quantities is an excellent stimulant for Onions, especially for a dry soil; soot, also, is very beneficial when applied to the land in spring, or as a top-dressing to the crop during its early growth. The season of growth of the Onion, especially when sown in spring, is short; therefore, everything should be done to prevent the crop receiving a check when the plants are young. Sprinklings of artificial manure in the majority of seasons will well repay for the outlay and labour. It is when a check comes from sudden drought, or any other cause, that Onion maggots

are usually so difficult to be dealt with. If by high culture continuous growth can be secured till the bulbs ripen off naturally, the maggots will not do much injury. In August or as soon as the tops die down—and it is a good plan to assist the maturing of the bulbs by bending the tops—pull them up and lay them on a hard surface to dry, turning them over occasionally; and, when thoroughly harvested, tie them in ropes or bunches and hang them in some dry, cool, well-ventilated place, as frost does not injure them. In all inferior or difficult soils, sow in August, about the second or third week, on a dry open piece of ground; keep them free from weeds during autumn, and transplant early in February on to land prepared as recommended for spring-sown Onions. In this way very fine bulbs are invariably obtained. The truth is, that Onions require a longer season of growth than can usually be had in our climate. Drought too often checks growth and dwarfs the produce, hence the advantage of sowing in autumn to give an early start. The sorts commonly sown in autumn are the various forms of Tripoli; but it is by no means necessary to confine ourselves to these kinds alone, as the Spanish, Globe, and other better-keeping kinds will do equally well if sown in autumn; and, if the main sowing be made at that time, it is important for a portion of the crop to be of the best-keeping kinds.

Leeks.

Sow in February or March in drills 15 in. apart, and when the young plants are large enough, thin out to 6 in. in the rows and plant the thinnings elsewhere the same distances apart, or sow the seeds on a small bed broadcast and transplant when large enough. If very large Leeks be required, open trenches the width of the spade and 15 in. deep, place 6 in. of rotten manure on the bottom, return part of the soil, and plant the Leeks at the distances apart already given. Onions do best in a firm soil, but Leeks, as may be readily supposed, succeed better in a soil comparatively loose, as the roots at once strike downwards, whilst the loose upper soil offers no obstacle to the rapid growth of the succulent stems. I have seen very good Leeks grown by simply making large holes with the dibble, dropping the plants in so that the roots rest on the bottoms of the holes with a few of the finer particles of soil just sufficient to cover the young roots at the bottom pushed into the hole, not applying any pressure. Of course in time, what with hoeing and the natural action of the

weather, the holes get filled up, but the soil round the stems of the plants does not set so hard as if the Leeks had been planted in the ordinary way; and as the season advances and the plants gather strength, the gradual earthing up blanches the stems and renders them more delicate in flavour, and in this way a much larger proportion of them is usable. This gradual earthing up may be continued through the growing season by drawing the loose particles of surface-soil up round the stems occasionally with a hoe, in the same way that Potatoes or other vegetables are usually earthed up. Leeks are deserving of far more attention than they usually receive in small gardens, this lack of attention being probably due to want of knowledge of their wholesomeness, either when cooked as a vegetable simply or in combination with other things; and if well grown, there are but few crops that will yield a greater weight of produce from a given quantity of land.

Shallots.

As regards the preparation of the land, Shallots require the same attention as Onions. The position should be open and fully exposed, and if the soil be light and dry, plant in October or November; but if heavy and retentive, delay the planting till February or March. Some cultivators plant the smallest and weakest bulbs, but a better result is obtained when fair-sized, sound bulbs are used. Plant in rows 1 ft. apart and 6 in. between in the rows. A very good plan to adopt in planting is to stretch the line along the bed, press the base of the bulbs somewhat firmly into the ground 6 in. apart, and when all are planted place a little mound of light, rich compost—of which charred vegetable refuse forms a part—over each bulb; one handful is sufficient for each, and it involves very little extra labour, being quickly done. It prevents the roots when they start from lifting the base of the bulb out of the earth, and as the season advances it crumbles down and forms close at hand a rich store of food for pushing on growth. Were it not for this plan of covering, the bulbs would in many cases require deeper planting, and in the majority of soils and seasons Shallots do better on the surface of the ground. Harvesting is a simple matter: when the tops die down take up the roots and place them on some hard, dry surface, fully exposed for ten days or a fortnight, turning them daily; afterwards store them in some dry, cool place.

Beet.

This is another root that is too seldom found in small gardens. A very small space would produce a sufficient number of roots to form a very agreeable change with the condiments usually available in a small household. Sow in drills about the middle or end of April; the drills should be about $1\frac{1}{2}$ in. deep and 12 in. apart, covering the seeds carefully and drawing the back of the rake over all in order to make the surface of the soil level. When the young plants appear thin them out to 8 in. or 9 in. apart, as medium-sized, or even rather small roots are preferable to those of a larger size for all uses for which they are applicable. They must be carefully lifted in October before severe frost sets in, and the roots must not be broken or bruised during the operation. They keep best stored in pits like Potatoes, a few only being taken out as required. The Pine-apple and Dimmick's Nonpareil are two of the best kinds for domestic use; the latter is a rather small, but elegantly-shaped root, of a pure stock, good both in colour and flavour.

Rhubarb.

Few cultivated plants have advanced so generally in popular esteem during the last twenty or thirty years as this. If treated liberally a very few roots will yield sufficient to make tarts and puddings for a family through the spring and early summer months until Gooseberries are ready, and the surplus produce afterwards will make an excellent preserve, or may be converted into a very wholesome effervescing beverage. It is one of the easiest plants to force, and with a very little trouble it may be had in season all the winter. Take up a few of the roots and place them in any position where a little artificial heat can be obtained in the same way as recommended for Seakale. Young roots of two or three years' growth force best; older roots will do, but they should be lifted as carefully as possible, and not cut about with the view of making them smaller, or the object sought after may be defeated. Rhubarb may be increased either by seeds or division of the roots; the latter plan, where only a few roots are required, is that most generally adopted. Plant in deep rich soil 4 ft. apart each way, and during the growing season; if fine stalks be desired, frequent applications of liquid manure will be very beneficial. It is not advisable to allow Rhubarb plants to remain too long on one plot of land, as the number of eyes increase rapidly, and, as a consequence, the

stalks, although numerous, are weakly and poor for want of room for development, no matter how well the roots may be fed. The best plan is to divide and replant a few roots every year if fine produce be wished for; or, if any roots be taken up for forcing, if not too much exhausted, they may be divided and planted in spring. As bearing directly upon early, vigorous growth, late or close pulling must be especially guarded against, as the plants must be allowed to carry to the end of the season a fair amount of foliage, in order to develop the eyes for next year's crop. When it is not convenient to force any portion of the roots, the early produce may be hastened by placing a forkful of rather long, half-decayed, littery manure over each stool shortly after the leaves die down in autumn. This mulching alone, I have proved, will make the difference of a fortnight in the time for the first gathering in spring. One of the best kinds to grow for general produce is the Victoria, as, although it does not come in quite so early as some other kinds, it bears so abundantly as to compensate for being a few days later than some of the small early kinds.

Peas.

In small gardens there is often as great an anxiety to have vegetables early in the season as in large ones; and as this, on the whole, is a laudable ambition, there is no reason why it should not be gratified. Where this desire is present, accompanied by the necessary perseverance, Peas for an early crop may be sown in autumn any time after the middle of November; and although this early sowing may not gain more than a week in point of early production over the crop sown in February, yet the gain of a week is a consideration eagerly sought after by some people. Sow on a warm, dry south border in drills $1\frac{1}{2}$ in. deep and about 5 in. or 6 in. wide. As this crop will have numerous difficulties to encounter, sow rather thicker than would be desirable in spring. The rows may be either 3 ft. apart or at wider intervals, with other crops, such as Lettuce, Cabbage, &c., between. After the Peas are covered and the surface raked smooth, scatter just over the rows a few sifted coal-ashes sufficient to cover the surface to prevent the mice finding them. I have never known mice injure Peas so covered. The trouble is very slight, and the remedy is always available everywhere. It also prevents damp lodging round the stems when the Peas come through. There is no better variety for early sowing than William the First; it is hardy, vigorous, prolific, and early. Unique has been

described as a very dwarf William the First, and is in every way adapted for sowing on narrow borders, as its height seldom exceeds 1 ft., and for a dwarf Pea it is very productive, with a good-sized pod. Amongst early white Peas, Carter's First Crop or Sutton's Ringleader is a very early variety. Dickson's First and Best, although a day or two later, is a very fine, prolific sort. There are so many varieties of Peas now to be had that one cannot do more than just mention a few of the most desirable kinds. As soon as the Peas are fairly above ground draw a small ridge of dry surface soil on each side of the rows; if the weather be wet and cold, it will be an advantage if the soil can be obtained from a dry, warm heap, or from a dry bank; little attentions of this kind will not be labour thrown away. In cold, frosty weather, the rows may be still further sheltered by evergreen branches, or branches of Oak or Beech with the dead leaves clinging to them, which should not be placed too close to the rows, or they may tend to weaken the growth, for cold piercing winds are usually more destructive to any tender growth than a few degrees of frost, and a few branches placed 6 in. or so away on the windward side will shelter without unduly weakening the plants. In alluding to this question somewhat fully my object is to show that too much shelter is as bad, or worse, in its effects than too little. Of course the sticks to which the Peas will have to cling for support must be applied in good time, and they in themselves will afford a good deal of shelter. Where early Peas are not so eagerly sought after, then the sowing may with advantage be delayed till February, or even March, if the weather prove unfavourable, as, in point of fact, there will not be much time gained between sowing a crop in February or one in March. If William the First, Huntingdonian, and Ne Plus Ultra be all sown at the same time, they will follow each other in succession better than any other sorts, and if a good crop be the first consideration rather than earliness, the first sowing might take place about the end of February or beginning of March, and even then it becomes a question whether it is not better to rely upon second early and late kinds, and not plant early kinds at all, as they are certainly not so prolific or lasting; this is a matter upon which each must decide for himself. One of the very best Peas for a midseason or late crop, either for a small or large garden, is Culverwell's Prolific Marrow. It is of medium height, very prolific, and has the power (possessed by only a few varieties) of withstanding drought in a marked degree. It has also a

perpetual bearing habit, which is probably due to its inherent vigour of constitution. In the way of new Peas, Carter's Commander-in-Chief is a fine variety amongst tall kinds, and Turner's Dr. Maclean amongst dwarf sorts, that no doubt will be sought after during the coming season. Where sticks are difficult to procure, Laxton's Marvel and Standard, from their dwarf, stiff, erect habit, will be desirable acquisitions for mid-season work, and they are also prolific bearers, and have long, well-filled pods. I need hardly say that to grow Peas profitably, the land must be well and deeply worked, and in very dry, porous soil; sowing in trenches in which some rotten manure has been buried 18 in. or so, has been found of great benefit. The greater part of the soil should be returned to the trenches over the manure before the Peas are sown, so that the top of the soil is about 3 in. below the surface; this will allow plenty of space for flooding with water should watering be necessary. In the case of late, or, in fact, any of the Marrow Peas, plant them evenly over the drills from $1\frac{1}{2}$ in. to 2 in. apart, according to kinds, thick planting being ruinous to Peas, or, indeed, to any other crop. When dry weather sets in mulch with manure, if it can be had, 18 in. or 2 ft. wide on each side of the rows; if manure cannot be had, then use the best substitute available. Fresh loose earth spread over the surface to the thickness of 2 in. or 3 in. will often produce a better result than meagre waterings. All late Peas should have the pods picked carefully, without pulling or breaking down the stems, and should always be gathered before they get too old for use, as unless this is attended to they exhaust the plants unnecessarily, and shorten the time of bearing. Peas should be sticked before the tendrils begin to form, so that they may have something to cling to, for if once allowed to lop over they never thrive so well after, even when placed again upright. There are various ways of arranging sticks to Peas, but the best way is to slope them considerably, and to let the sticks on each side lean the contrary way. The Peas are not so liable to be blown out, and there is a saving of sticks over the upright method of staking, while instead of allowing the tops to meet, as is generally the case, leave an interval of 4 in. or 5 in. between, to insure plenty of room for the Peas to grow inside the sticks. Where a succession of Peas must be kept up, the rule is to sow again as soon as the last sowing is well through the ground, making the last sowing of Marrow Peas about the second or third week in June, after which time in the

majority of soils and situations, they will not, by their produce, pay for the seed. If snails or sparrows be troublesome in the spring, dust the Peas freely with soot early in the morning; this will not only render them distasteful, but will act as a manure, strengthening and invigorating the crops. The produce of all Peas, especially late varieties, is much superior if the rows can be isolated, with dwarfer crops of vegetables growing between them. When crowded together they cannot obtain that free circulation of air so essential to vigorous growth.

Scarlet Runners.

This useful vegetable, which has long been a favourite, still retains its well-merited popularity. The artisan who has only a small yard for a garden often with considerable labour and ingenuity improvises a bed for Scarlet Runners, and so not only secures a frequent dish of his favourite vegetable—rendered all the sweeter from the trouble incurred in its production—but clothes and beautifies his back premises at the same time. As a vegetable for small gardens this takes precedence of the Pea, and although Scarlet Runners have been cultivated in positions where most other vegetables would fail, yet at the same time scarcely any crop makes a better return for liberal treatment. Depth of soil and plenty of manure are important matters, and the benefits that accrue from autumn and winter culture need not now be enlarged upon, having been so often referred to in these pages. Commence planting from the first to the middle of May, according to the position and latitude of the place. The young plants are very tender, and early-sown crops are often ruined by spring frosts. Plant in drills 6 in. or 7 in. wide, two rows in each drill close to the sides, and the Beans should be planted 6 in. apart in the rows. Draw the drills with a hoe about 3 in. deep, the same as for late Marrow Peas. The rows give a larger crop if they can be isolated, with dwarf vegetables between them. If placed parallel to each other they should not be less than 5 ft. apart, and even more space would be preferable. The second crop should be planted about the first or second week in June; and although in all probability the first crop, if properly managed, will continue bearing till cut off by frost in autumn, yet, if in the event of a dry, hot summer, it should be checked in the midst of its bearing; it is always a good plan to make two sowings. They should be earthed up and staked before the plants begin to run,

and the strongest sticks that can be obtained should be reserved, especially if the situation be exposed, as the wind has considerable power upon their thick, close growth. It is important that the Beans should be gathered as soon as fit for use, especially during the early part of the season, for seed-bearing tends to exhaust the plants and stops the production. Later on in the season, when the nights are longer, should it be desired, a few pods may be left to produce ripe seeds without doing so much injury. In small gardens, where land is valuable, they may be planted in circles 2 ft. or so in diameter, with about a dozen Beans round the circumference. The patches may either be grouped together or be placed along the sides of a path convenient of access—of course in both cases leaving sufficient room for the free admission of light and air to circulate between the patches. In some cottage gardens I know this is rather a favourite way of planting them, as it is considered they are more productive when so treated. The strong leaders, when about 4 ft. high, should be stopped, and again when they reach the tops of the sticks, which should be 6 ft. high if possible. This stopping strengthens the plants, keeps them at home, and leads to great productiveness. In hot weather mulching is very beneficial, and two or three good soakings of water during a sudden drought when the plants are in flower, will assist the fertilization and save the crop. Scarlet Runners may also be grown without sticks by adopting a system of close pinching, but in small gardens some mode of training should be adopted, as the space upwards adds nothing to the rent, no matter how densely occupied.

Dwarf French or Kidney Beans.

On a warm south border these may be planted as early as the middle of April; Canadian Wonder and Negro Long-pod are two of the best varieties. Where an early crop is an important consideration, the Newington Wonder, although small, is prolific, and comes in early, but the pods must be gathered when fit for use, as, unlike the larger kinds, they soon get old and tough. Plant in single rows 2 ft. apart, draw the drills with the corner of the hoe from 2 in. to 3 in. deep, and plant the Beans 6 in. apart in the rows. In many gardens they are planted too thickly, and the plants in consequence do not bear so continuously, or so freely, as they ought to do; and, moreover, this thick planting induces weakly growth, that succumbs sooner to drought or any other unfavourable influences. When

fairly above ground draw some of the warm, dry surface-soil round the stems to shelter and strengthen them, and gather all Beans as soon as they are fit for use. To secure a plentiful succession, plant a few once a month till the end of June.

Premier Runner Bean.

I mention this Bean because, although hardly so serviceable for small gardens as the Scarlet Runner on hot porous soils, it is worth a trial, being less liable to suffer from the attacks of red spider. It is a climbing variety of one of the Long-podded Kidney Beans—a vigorous grower, and bears long tender pods, not unlike the Canadian Wonder. It should be planted about the same distance apart as the Scarlet Runners, and requires staking in the same manner as that variety.

Broad Beans.

These, like Peas, for a very early crop, may be planted in November, and as they transplant very easily and safely, when autumn planting is adopted, plant them thickly on a warm raised bed where a little shelter can be given in severe weather; then in February, when the land is in good working condition, lift the young plants carefully, with all their roots intact, and plant in fresh, well-prepared ground in rows 2 ft. apart and 6 in. between the individual plants. Another plan is to sow thickly in a box in January, and place them anywhere under glass, or in any warm, sheltered place, and transplant as above stated, pressing the soil firmly about them. These early plantings will, of course, only be on a small scale, for the purpose of securing an early dish or two, as early in February will in most places be time enough to plant the main crop, which may consist of some of the Long-pod section. The Green Long-pod is a good variety for general purposes, and the Seville Long-pod—the longest of the whole—is a very fine Bean, especially for exhibition. Plant again for succession in April, and the Broad Windsor for the latest crop about the middle of May, in double rows 2 in. to 3 in. deep, and the rows should be 2½ ft. to 3 ft. apart; cover the surface of the soil with ashes to protect from mice, and earth up when about 3 in. or 4 in. high. When well in flower nip off the tops; this throws back the strength of the plant into the crop, and if, as frequently happens, the young growths be infested with black aphides, it will be the means of clearing them off. When all the pods are picked off, as soon as they are fit for use, it frequently happens that new growths will

break away from the lower part of the stem and produce a good late second crop. It may not always be advisable to leave them for this purpose, but it is as well to have the choice of doing so, and they rob the land less in this way than if a part of them be left to get old before being pulled up. The soil most suitable for this crop is a strong, heavy loam; light land should be made firm before planting.

Cauliflowers.

In the Midland and Northern Counties Cauliflowers cannot be relied upon to stand the winter without some protection. Of course there is nothing so good as glass in some shape, and although I hope to see the time when every cottage gardener who really loves his garden may have his frame or turf-pit, yet at the present time such aids to cultivation are not generally found; but by sowing and planting the early crop in the warmest positions, by frequently scattering dry ashes amongst the young plants to prevent damp settling round the stems, and at the approach of cold, frosty weather, applying some thin shelter that will protect without weakening, vegetables may be safely passed through the winter. Cauliflowers may easily be wintered. A few evergreen branches, placed amongst the plants, or laid over them without touching them, will generally be sufficient; fronds of Bracken will answer even better, or a few dry leaves scattered amongst them will also be effective. Simple contrivances are often more serviceable if put on and removed at the right time than more elaborate protection thoughtlessly used; it should always be borne in mind that protection, except in the most severe weather, is neither necessary nor desirable. By adopting the means I have just recommended there is nothing to prevent the humblest cottager having his Cauliflowers ready in June, and a man of limited means within reach of a town will find this a very paying crop to grow. Sow from the middle to the end of August, according to situation and season. There is nothing gained by sowing too early, especially where only one sowing is made, on account of the tendency of the early-sown plants to bolt prematurely. It has generally been the custom to recommend such plants to be pricked out at the foot of a south wall to stand the winter on account of the warmth and shelter afforded, but I very much doubt the wisdom of such a proceeding, unless the plants can be shaded from bright sunshine during severe weather, otherwise the extremes of temperature will cause

more losses than if the plants had been wintered in some open, fully-exposed situation sheltered in the way I have suggested. The same objections do not apply with so much force to the south side of a hedge, as the constant circulation of air prevents in a great measure any ill effects arising from bright sunshine when followed by frosty nights. After all danger from severe frosts is past, the foot of a south wall is a most desirable situation in which to plant the earliest patch, as they will be free from that alternate thawing and freezing to which they would be exposed in such a position in winter. The Early London is a good kind to sow for early work, and if at the same time just a pinch of the Walcheren and Veitch's Autumn Giant be sown, a succession may be secured without much further trouble. When the young plants are large enough to handle prick them out into some dry, warm bed, bearing in mind the hints just given about the destruction often caused by alternations of frost and thaw during severe weather without the true cause being always suspected. Give them sufficient space in order that they may form vigorous young plants; not less than 3 in. apart will be necessary, and even more if it can be spared. About the end of March plant them out finally on land that has been thrown up roughly and well pulverized during winter. Draw rather deep drills 2 ft. apart, and plant in the bottom of the drills 18 in. apart. Inexperienced planters often make a mistake in not fastening the plants firmly in the soil, especially where a dibble is used, but in moving any that have been pricked out a trowel is the proper implement to use; but whether planting with a trowel or dibble, the plants should be fixed in their positions with a moderate degree of firmness, somewhat resembling those they previously occupied. Where this operation is not attended to the plants are a long time before they make a fresh start, and of course valuable time is thereby lost, and some of the plants not unfrequently perish. The after culture consists in frequently stirring the soil during the early season, drawing a little earth up to the stems each time; liquid manure, if it can be obtained, will pay well for any labour or trouble incurred, and on dry, porous soils, mulching will be very beneficial. For late summer and autumn use sow a pinch of the Walcheren and Veitch's Giant about the middle of April and again in the middle of May. These sowings may be planted out direct from the seed-bed, whenever and wherever vacant land in good condition can be spared. Usually an open position is the best. but during hot summers, if a cool, partially-shaded

spot be available, it will be very useful, not only for Cauliflower but for many other plants. Those who have a frame or a turf pit (the latter especially is a very cheap and useful structure, which will be referred to more fully hereafter) may delay the sowing till September 1, and sow in the pit either in a box or boxes. In such a position the seeds will vegetate with certainty, without any danger of the birds destroying the young plants as they come up. Where there is a turf-pit, there is no better way of managing young Cauliflower plants in winter than putting them into 60-sized pots when large enough to take from the seed-bed or box, plunging the pots into sawdust or anything similar that will keep the roots moist and comfortable, fitting them as close to the glass as possible without absolutely touching it, and ventilating abundantly when the weather is favourable. Any one who has noted how such plants start away when planted out in March or April will not begrudge the little extra labour involved by such operation. Young plants with plenty of healthy young roots may be moved without receiving any check, whilst plants pricked out close together in the ordinary way, no matter how carefully moved and planted, must lose a great number of their best roots. I may just mention now, that in the early stages of growth soot or lime may be dusted over them occasionally to keep slugs at a distance; and this refers equally to all the other members of the Brassica family, which I shall notice further on. Birds also are very partial to their seeds, and wherever the feathered tribes are numerous some means must be adopted to protect the seeds from their ravages. There is nothing better or cheaper in the long run than covering with old fishing nets, raised a few inches from the ground on sticks. Cotton or thread, crossed and re-crossed over the bed, will often scare them for a sufficient time to enable the young plants to get out of their reach.

The Cabbage.

Except the Potato there is no other vegetable so universally grown or so thoroughly appreciated by cottagers as the Cabbage. It will grow anywhere and under any conditions, but, like most other vegetables, it delights in a deep, rich soil; it is desirable, however, to have it in a somewhat firm condition where early produce is desired. In some places young Cabbages are frequently cut off by severe weather in winter, especially if planted in autumn in loose, freshly-worked land. The remedy

in such a case would be to make the ground somewhat firm before planting, or to have it prepared a month or so before in order to give time to settle. Planting any kind of green crop on loose, soft land in autumn encourages an early, luxuriant growth, which is liable to suffer during a severe winter. Of course, where the land is never dug more than one spit deep, the objection does not apply with so much force, but every cottage gardener ought to arrange his cultivating operations and his crops in such a manner as to enable him to dig the whole of his land at least 2 ft. deep every four years, and he will find in the long run that this, instead of adding to the cost of working his land, will in reality cheapen production, if the improvement in the quality and quantity of the crops be taken into consideration. It scarcely requires any argument to prove that anything that opens up new sources of plant food almost free of cost must be a great boon to the cottager, and will eventually become an increasing source of profit to him. Sow from the middle to the end of July, according to the earliness of the situation. If the weather be dry, which is frequently the case in July, have the ground thoroughly soaked with water twelve hours before sowing the seeds, and afterwards shaded by laying a mat over the bed. Rhubarb leaves or branches with the leaves adhering can be used, only they must be removed and the earth between the young plants loosened up as soon as they appear. The seeds should be sown thinly in drills about 8 in. apart, and the ground for the main crop should be prepared and made ready for planting by the first or second week in September. Many cultivators usually plant Cabbages after the Onion crop; I have done so for years, and the only labour necessary is to hoe the ground up deeply, draw drills 2 in. or 3 in. deep and 20 in. apart, and plant in the drills 18 in. apart. This plan answers well where the ground has been deeply worked and made very rich for the Onion crop, but must not, of course, be taken as applicable to every situation and under all circumstances. In a country like ours where the geological conditions are so varied no rule can safely be laid down for the guidance of all alike. The small plants that are left in the seed-bed may be pricked out thickly in some vacant corner till spring; they will come in useful to fill up vacancies and to make another small plantation for succession to those planted in autumn. If it be considered desirable, another sowing may be made in March or April to plant out in any spare land for autumn use, but, unless the demand for Cabbages be considerable, this will hardly be necessary, as if

the stems from which the early Cabbage have been cut be allowed to remain, and the leaves carefully trimmed off, each stem will produce three or four small hearts quite equal to those planted late in spring in quality though not quite so large; in fact, the second crop on good land is superior to the first. The old stems should be cleared off in time to have the land ridged up roughly in winter for Potatoes the following season, as that crop will be found a very good rotation, and as other crops of Greens will be ready by that time, the Cabbages may be dispensed with. Three of the best kind for garden culture are Atkins's Matchless, Wheeler's Cocoa-nut, and Enfield Market.

Savoy Cabbage.

Where bulk rather than quality is the object sought, sow Drumhead early in March, and plant out in June in drills, 2 ft. apart, and 20 in. in the rows. But for garden culture, where delicacy of flavour is appreciated, plant the smaller kinds, such as the Dwarf Ulm, Marcellan, and King Koffee. The latter is a delicious vegetable, very tender, and less coarse in texture than the larger kinds; although small, it may be planted so much closer together, that after all it will be found to be a profitable crop. Sow in March, April, or May, according to the time the crop may be required; and it is a really good plan to sow a few seeds in each month; and put out a few plants at intervals in any convenient spot, from May to August. Planted in rows, 1 ft. apart, and 9 in. in the rows, will be ample space between.

Red or Purple Cabbage.

This vegetable, so desirable for pickling, may be sown at the same time and treated in the same way. They may also be sown in March, and if planted out on good land, when large enough, they will produce firm, late hearts, not quite so large as the produce of those sown in the autumn, but they will keep longer, and may perhaps be more useful for home use.

Brussels Sprouts.

I have often thought that if small cultivators knew and appreciated the value of Brussels Sprouts as a winter vegetable, it would receive more attention at their hands than at the present time. There is no gainsaying the statement that cottagers, as a rule, do not cultivate vegetables to so great an extent as lies within their power. Happiness is in some measure dependent upon health, and health is largely influ-

enced by the nature and variety of the food supply. I most willingly admit that Potatoes, according to our present tastes, are well-nigh indispensable, but that does not furnish a sufficient reason for our remaining satisfied with them only, when other vegetables that are nutritious and easy of cultivation may be had in abundance without much trouble or outlay. Brussels Sprouts are both hardy and prolific, the severest winter usually leaving them unscathed; and by sowing two or three times at short intervals, a successional supply of this delicious, compact vegetable may be obtained in plenty, from October to March; while the old stems will afterwards produce several dishes of tender young greens. Sow a pinch of seed early in March, and again about the end of April. In cold, late situations, this and several other winter Greens may be advantageously sown thinly in September, left in the seed-bed during the winter, pricked off early in spring, and put out finally early in May. This treatment insures an early start, and consequently a long time for growth; and where an autumn supply is desired, it will be found a very good plan to adopt, but though it involves more labour, and the crop occupies the land for a longer time, yet a fuller development of the plants and a better and earlier crop are thereby secured. In many cases an early crop is not required, therefore the March sowing would be early enough, with the April sowing to follow on after Christmas and lengthen out the supply. Although they will make a good return under any reasonable conditions, yet deep, somewhat strong land suits them best. They may be planted immediately after the early Potatoes, if the land be in fair condition, without much preparation, and again a later crop in July wherever land may be vacant. Those plants that are put out early will require rather more space than the later crop—2 ft. apart each way will not be too much for the former if the land be in good heart; whilst for the late crop, 20 in. between the rows and 18 in. between the plants in the rows will suffice. There is a considerable variation in this vegetable, therefore it is important to have seeds only from a reliable source, whether imported or home-grown, I think, matters but little if the stock have been selected with care.

Borecole, or Kale.

The dwarf Green Curled and the Cottager's are the best varieties for small gardens, and they require the same treatment as Brussels Sprouts.

Broccoli.

There is vast confusion among the different varieties (so called) of this vegetable, but the five following sorts, if obtained true to name, may be relied upon to furnish a supply from November to May, subject, of course, in some respect to the weather:—Veitch's Autumn Self-protecting, Snow's Winter, Early Penzance, Cooling's Matchless, and Cattell's Eclipse. Sow in March and again towards the end of April, in well-prepared land, in drills 8 in. or 9 in. apart, and 1 in. deep. When the plants are large enough to handle, prick out some of them, if they stand at all thick, on to any vacant piece of ground, 3 in. or 4 in. apart; many plants acquire a weakly constitution through remaining too long in thick seed-beds. Commence planting them out finally in May, the largest first, and follow it up as opportunities occur and land becomes vacant until the end of July; a better succession will often be obtained this way than if all were planted at once or twice with an interval of several weeks between. As regards the preparation of the ground, the first point to ascertain is the character of the soil, in order that the best course of treatment may be adopted. One cultivator will plant his Broccoli in the hardest ground, and, if need be, make the holes with a crowbar; whilst another will always manure and dig his land before planting. Such differences of opinion may appear at first sight irreconcilable, but it is entirely a question of soil and situation. Some years ago when I had to deal with a light, hungry soil, I used to dig out holes 18 in. deep, put a good forkful of manure in the bottom of each hole, return the soil previously dug out, press it down with my foot, and plant just over the manure—and I found that the Broccoli succeeded very well under this method; but here I never dig or manure for Broccoli, for the simple reason that I find I can obtain better heads without, besides securing the well-matured growth that invariably follows the planting of this vegetable in a firm soil, and enables them to pass uninjured through a severer winter than if some pains had been taken to cultivate and manure the land just previous to planting; at the same time, it must be borne in mind it is only on land that has been at other times well manured and deeply worked that this result can be obtained. To plant with a crowbar on poor and unworked land would probably be a failure, unless liquid manure could be freely given. In shallow, hungry soils manure and dig just previous to planting the crop, but on a deep, unctuous loam that has been long under

cultivation hoe up the surface deeply, draw drills 3 ft. apart, and plant 2 ft. between in the rows. The same difference of opinion exists generally amongst cultivators as to the best mode of preserving the plants through a severe winter. One recommends the heeling in of the plants with their heads to the north in November, as by so doing, although your Broccoli will, perhaps, not be so large, you will at least save some; whilst the advice of another is to leave the plants as they are, but protect the stems. In my opinion, under certain circumstances, both plans may be successfully followed. In adhesive land, when even if well drained it is always damp in winter, I should not lay them down, but, on the contrary, I should raise ridges of soil round their stems, and when frost sets in, if unaccompanied by snow, cover the plants with a few evergreen branches or dry fronds of Bracken. Since I have adopted this mode of treatment I have seldom lost any. On lighter, drier land the plants may be heeled in with advantage, which latter operation is performed in this way:—Begin at the north end of the first row; open a hole by taking out two or three spadeful of soil on the north side of the end plant, then pass to the south side of it, press the spade into the ground 8 in. or 9 in. from the stem, and turn the plant over on to its side, and the ball will slide into the hole previously made. The soil taken from the north side of the next plant may be laid over the stem of the first one, and so on all through the bed. I wish to draw special attention to Veitch's Autumn Self-protecting Broccoli, as it should be found in every garden where autumn vegetables are in request. If sown in March and planted out in June, it will produce fine white heads in November and December; and as the leaves lie so closely over the hearts, a few degrees of frost will not affect them. It will be found a very good companion to the Autumn Giant Cauliflower.

Spinach.

A small bed of autumn-sown Spinach will supply a quantity of dishes throughout the spring, at a time when a change of vegetables becomes desirable. Sow the prickly-seeded variety the last week in August, or in early situations the first week in September; the earlier it is sown the sooner will it run to seed the following season. As regards the preparation of the land the same remarks will apply to a great extent to Spinach as I have recommended for Broccoli. I generally sow Spinach after early Potatoes, without any special preparation beyond

raking the surface evenly and smoothly. Sow the seeds thinly in drills $1\frac{1}{2}$ in. deep and 1 ft. apart, and thin out the young plants to 4 in. apart; the surface of course must be often stirred with the hoe to maintain the soil in a healthy condition, but I need scarcely mention that this should never be done when the land is wet. In gathering the produce for a certain period pick off the largest leaves only, but when the plants begin to run in spring the best plan is to cut off the whole tops of the plants down to within 1 in. or 2 in. of the ground; a new growth will then take its place, that may, when sufficiently large, be served in the same way, until finally the roots are exhausted, when of course the remains should be cleared off and the land well manured and cultivated for the succeeding crop. It is the natural tendency of every plant in spring and early summer to throw up flowers and produce seed, but it is far better to divert the strength of all culinary plants that are esteemed for their leaves only into the production of young succulent growth, especially as this not only tends to increase the bulk but also extends the season of bearing of the crop. Summer Spinach is in a general way not a profitable crop for a small garden. Where it is desired, however, it may be used as a catch crop between rows of Peas, but unless the soil is deep and moist, Spinach in summer will bolt almost as soon as it is fit for use. In special cases where a succession of Spinach is required through the summer the New Zealand Spinach will be found to give satisfaction. Select a warm site and prepare hills as for Ridge Cucumbers; plant half-a-dozen seeds in April round the top of each hill, and if all of them grow thin out to three, of course leaving the strongest. This Spinach is commonly sown in heat in small pots and planted out in May, but it will grow just as well out-of-doors, only it does not come into use quite so early. Hundreds of young plants generally come up in the beds where it grew the previous year, but they will not transplant well on account of the paucity and length of their roots. New Zealand Spinach will continue bearing till the frost cuts it off in October.

Celery.

The Sandringham Incomparable White is the best Celery for early use, and, in fact, altogether the best White Celery for small gardens. It is very dwarf and robust in habit, and if planted in single rows, they may be placed nearer to each other than those devoted to the growth of the taller sorts. If there be a frame, some effort should be made to start a gentle

hotbed early in March, as so much can be effected with only a few leaves and litter thrown together to cause a gentle heat. Where this convenience is at hand, sow a few seeds for the early crop in a pan or box. The soil should be rich and light, and pressed down firmly, the surface made level, the seeds sown thinly, and covered lightly with fine, light soil, and the soil kept in an equable state as to moisture. When the plants come up they will be frequently very thick; in such cases thin out the weakest-looking to give the remainder a little more space till they are of sufficient size to handle, which will be when they have made three leaves; they should then be pricked off 3 in. apart into boxes, or, better still, if possible, prick them into small pots filled full of warm, light, rich soil, one plant in the centre of each pot, and place the pots in the frame in a light, warm position, taking care that they do not suffer from drought till they are finally hardened off and planted out. If there be only a hand-light, a hole might be dug in the ground in a sunny corner, filled with fresh manure, covered with 6 in. of light soil, in which a pinch of seed should be sown, and covered with a hand-light. This treatment will give a much earlier start than if the open-air seed-bed be altogether depended upon. In the latter case the first week in April will be sufficiently early, and, with the White, a few seeds of Leicester, or some good Red kind, should be sown for late use. The seeds usually grow freely enough if the beds be kept moist, and the weakly plants must be thinned out early, as it is bad policy to leave them to draw each other up weakly. Select an open site with a good hard bottom for the nursery bed; place on it 4 in. of the richest material that can be procured, but at the same time there must be no rank manure mixed with it—old, thoroughly decayed vegetable matter, with a little charred or burnt material mixed with it, will answer admirably for the purpose: press it down moderately firm, and prick out the young plants 4 in. apart. If the weather be very bright they must be shaded for a few days till they get established, and they will at all times require plenty of water. Should a few plants have been started in boxes or pots in the frame for an early crop, they will be fit to go out in May, and on no account must they be allowed to be starved or checked for want of water; and in some cases it may be advisable to pot them into 48-sized pots, if there be the least fear of their becoming pot-bound before the trenches are ready; but the kind I have named (the Sandringham) is not nearly so liable to bolt as the other varieties I have grown in this way. To

obtain very late Celery for soups, sow a pinch of seed of a good keeping sort (the Sulham Prize, for instance) about the end of May. Not only Celery, but all biennial plants are less inclined to flower when sown late. The late-sown plants will require the same attention in thinning and pricking out into nursery beds as those raised earlier. Celery is usually grown in trenches for the double purpose of supplying it easily and abundantly with water, and for the facility this mode of planting gives for earthing up. The trenches may vary from 6 in. to 15 in. in depth, according to the season of the year and the nature of the soil, and from 1 ft. to 3 ft. or more wide, according to the number of rows planted in each trench. In light, dry land there is sometimes an advantage in planting two or more rows in a trench, of course making the trench of a corresponding width, but in damp, heavy land single rows keep better, because in winter the surplus water drains freely away. Rank manure should never be used in Celery trenches, for not only does it tend to spoil the flavour, but it acts prejudicially in other ways; therefore, whatever the kind of manure employed, it must be thoroughly decomposed. A good thickness of old hotbed manure will be found to afford good nutriment to the plants, and to this may be added, if the increase in bulk be desired, any refuse vegetable matter that has gone through a regular process of fermentation and decay. The trenches may be prepared any time when the land is vacant (the earlier the better), as it frequently happens that a crop of Lettuce or Cauliflowers may be taken from the spaces between the rows of Celery before the earth in which such crop may be grown is required to blanch the Celery. If the planting be done during dry weather, water the trenches well early in the morning and put out the Celery in the evening following. They must be carefully lifted from the nursery-bed with all their roots intact. This can easily be done by running a steel fork in a horizontal position under them to loosen them and partially raise them up, when they may be carefully separated with the hands, all small offsets being removed at the same time with a sharp knife. Plant them 9 in. or 10 in. apart and about 2 in. deeper than they were formerly, finishing off with a good soaking of pond or river water. The early-sown plants will be ready to go out in May, and the main crop towards the end of June, whilst the last sown crop, to come in for late spring use, will be put out early in September. This latter crop will, of course, never attain the same development as those previously planted;

and its object is to bridge over the season (more especially for flavouring and cooking purposes) till the early crop of the following season is ready. Some difference of opinion exists as to the best mode of earthing up Celery and the time such operation should be performed. I consider a mulching of decayed manure very beneficial shortly after planting, and a frequent use of the Dutch hoe to loosen the soil. Of course each time the hoe is used a little loose earth may find its way round the plants, but beyond this I do not recommend earthing up till within six weeks of the time the early crop may be required, or, in the case of the main crop, till it is nearly full grown, then earthing it up at one operation; and this should be done when the soil is in a workable condition. It is pretty generally known that exposure to severe frost will spoil Celery, therefore it will be necessary to provide some protection—the lighter and drier the better. During the growing season house sewage or liquid manure of any kind (not too strong) may be freely applied, and soot may be occasionally scattered along the rows with beneficial results both as a stimulant and as a preventive against the attacks of insects.

Salads.

An effort is seldom made by the occupiers of small gardens to supply anything like a succession of the materials used for salad making, and yet there are often patches of bare ground sufficient in many gardens, if made the most of, to do this without much expense or trouble. A cottage gardener cannot afford to have any headlands round his small patches of vegetable or fruit ground. Mustard and Cress, Radishes, Lamb's Lettuce, and even Lettuces, may be grown in the margins and corners, or be taken as a stolen crop, so to speak, in the early growth of others that require more time, without doing any injury. All this of course implies the possession on the part of the cultivator of that thought and perseverance that prompts him to leave the beaten track and strike out an independent path for himself, and there is as much need for this in cottage gardening as in other things. The cultivator who thinks is hardly ever satisfied with things as they are, and there is nothing so perfect that may not be improved. There is no royal road to the possession of any kind of knowledge, especially practical knowledge; that at least must be acquired by steady persistent effort, by cultivating that faculty of "trying again" when things do not turn out exactly as we wish—that always ultimately leads to success.

Lettuces.

To commence at the beginning of the season, sow a few seeds in February of the Tom Thumb, or any of the small, quick-growing Cabbage Lettuces—the early Paris Market is an excellent kind—in a pot in a warm, sunny window if there be no hand-light or frame; place a handful of rubble in the bottom for drainage, fill up to within $\frac{1}{2}$ in. of the top with light, rich soil, make firm, sow the seeds thinly, and scatter sufficient fine, light soil over to just cover the seeds, then press the surface down with the bottom of another pot or something similar. If the soil be just kept moist, the seeds will soon vegetate, when the plants may be hardened off, and be planted out 8 in. apart in any warm corner. A pinch of White or Green Cos may be sown at the same time and be treated in the same way, only when planted out give each a square foot of space. Unless there are means of disposing of a portion of the produce, a very small pinch of seeds at each sowing will be ample. Little and often should be the rule. At the same time that the seeds are sown in the sunny window just a pinch should be sown in some warm corner in the open air: these will form a good succession to the plants raised in the window, and from this time to the middle or end of July sow a few seeds at intervals of every three weeks or so. The June-sown plants, if it can be managed, should be sown thinly, without transplanting, on some cool, partially-shaded border, for in hot weather both Lettuces and Cauliflowers, if transplanted, are more liable to bolt prematurely than if undisturbed. The Bath or Brown Cos should be the kind principally sown in July and August for autumn and winter use, as it is hardier and better able to resist cold weather than other kinds. A few seeds may also be sown about the 1st of September to stand in the seed-beds all winter to put out in spring. Small plants generally go through a severe season better than larger ones, but in very severe weather it is easy to lay a few fronds of Bracken over them when there is a sharp frost unaccompanied by snow, but when the ground is covered with snow, no other protection is necessary, as that is Nature's own covering, and, unlike all others, it protects without blanching or weakening. Although I recommend frequent sowings to be made, it does not follow that large quantities of seeds need be purchased. Probably in many, if not most gardens the same quantity of seeds now used, if divided into six or eight portions and sown at intervals through the season, instead of being all sown at once or at the most twice, would suffice to give a

moderate succession. Of course some pains must be taken to place the seeds in a suitable position to germinate, and although Lettuce will produce a very useful crop under very moderate cultivation, yet to grow a first-class crop it requires as much skill and attention as it does to produce a prize dish of Potatoes or Cauliflowers. Mulching in dry, hot weather will well repay the trouble. Liquid manure, where it can be obtained, will insure a quick, crisp growth; and, where neither are available, a frequent stirring of the surface an inch or so in depth will be of great service. All Cos Lettuces are improved by being tied up to blanch a few days before they are used, as are also some of the large, loose-growing Cabbage Lettuces. The Brown Cos from the July and August sowings for autumn and winter use should be planted out on a warm, dry site, and if covered up with dry leaves or Fern when nearly fully grown, and the plants themselves are dry, they will keep in good condition a long time, and will become white, crisp, and delicate.

Endive.

This is rarely grown in small gardens, but it forms a very desirable addition to the salad bowl in autumn and winter, especially if Lettuces be scarce or inferior. Sow towards the end of June (if sown early the plants are very likely to bolt before they are large enough for use) in drills 1 ft. apart, and when large enough thin out to 10 in. or 12 in. apart in the rows; the thinning may be planted elsewhere the same distances asunder. Sow again in July, and transplant the principal part in some open, well-exposed situation; the remainder should be planted in some well-drained, raised border. A few more may be sown in August if some shelter, such as a frame, can be found for them in winter. There are various ways of blanching them, viz., by laying boards or slates over the plants when they are full grown and quite dry; tying them up and placing inverted flower-pots over them, with pieces of slate over the holes at the tops to exclude light; covering them with dry leaves or coal-ashes; or taking them up with balls of earth and storing them in a dark cellar—placing them, in fact, in any position not too damp to induce decay, and from which light can be excluded. Of course only a few should be blanched at a time, as this hastens decay, and they should not be blanched till they nearly fully grown. In other respects Endive requires much the same treatment as Lettuces. There are several varieties, but the Green Curled is the most useful.

Radishes.

Sow the Salmon Short-top or Wood's Frame on a warm rich border early in February, and cover with clean long straw or mats. As soon as the seeds come up the coverings should be taken off every fine day, and replaced at night until the plants are gradually inured to the weather. From March to September sow the French Breakfast—an Olive-shaped kind—at intervals of a fortnight or three weeks. The early and late sowings may be made on a warm border of light, rich soil. In very hot weather sow in a north or shady aspect, at other times sow in any open position. Quick growth is essential to mild flavour; therefore abundant watering in dry weather will be found serviceable.

Rampion.

This is scarcely known in small gardens, and I just mention it here as it proves a desirable addition to winter salads. Sow in May, in a partially shaded position, such as the west side of a wall or hedge where the soil is light and rich. The ground should be well prepared, made firm, and the surface smooth and level. The fine dust-like seeds must be thinly and evenly sown over the bed, which might be about 8 ft. long and 4 ft. wide, and the least possible covering of fine soil will be sufficient. The young plants when large enough should be thinned out to 3 in. apart, and the thinnings transplanted if required, taking care to insert the roots straight down. They will come into use in autumn, and will continue in season during the winter and early spring months. The white roots may be eaten like Radishes, or both roots and leaves cut up with other ingredients for salad.

Corn Salad or Lamb's Lettuce.

This grows well without much trouble in almost any soil. Sow in February or March for the first crop in drills 6 in. apart, and thin out to 4 in. asunder. They are best used when quite young. Sow again in May, June, and August under similar conditions. In gathering the winter crop only the outer leaves should be used, leaving the roots for further production, but in summer the whole plant may be cut up when young.

Mustard and Cress.

The culture of these is generally so well understood that little need be said respecting it. Sow thickly in drills from

February to September as often as may be necessary to keep up the required supply. In hot weather sow in a shady position and keep moist by laying Rhubarb leaves over the drills until the seeds germinate. In winter they may be forced in any light position where the requisite temperature can be secured. In a warm kitchen or room a constant supply might be kept up without much trouble.

Herbs.

No garden, however small, can be said to be complete without its bed of Herbs, which are indispensable for flavouring purposes. With the exception of Parsley, Herbs are best grouped together in small patches in proportion to the demand, but yet at the same time each patch should be kept distinct. To keep them in strong, vigorous condition, they should be renewed by division, and in a few cases by seeds or cuttings about every two or three years. Some kinds, if they stand too long on one piece of ground, lose their vigour, and the winter, if severe, has more effect upon old plants than young ones, and may sometimes, by killing them off, occasion a scarcity; but where the plantations are frequently renewed this seldom or never occurs. Herbs are not at all particular as to soil or aspect, but one or two kinds, such as Tarragon, should not be planted in wet, cold soil if it can be avoided. From March to the end of May is a very suitable time for putting in cuttings, sowing seeds, or dividing the roots, and if called upon to speak more exactly, I should say get all such done in April if possible. The cuttings or slips—as they will succeed well if slipped off with a heel—may be planted with a dibble, and of course should be planted firmly. In planting cuttings at all times and in all places the length of the cutting should be considered, and the hole only made deep enough for the base of the cutting to rest on the bottom. Inexperienced planters often unthinkingly practise what is termed “hanging” when planting either plants or cuttings with a dibble; that is, they make the holes deeper than the length of stem, and, consequently, the roots of the plant or the base of the cutting, as the case may be, hang suspended in the hole, and cannot obtain a sufficient grasp of the soil to become quickly established, and often perish in consequence. Of the Herbs that are commonly used for flavouring purposes, and which are indispensable, are Thyme (two varieties, Common and Lemon), which may be increased either by seeds or cuttings or division.

of the roots; Sage (Green and Red), which may be propagated by seeds and cuttings. Of Mint, several varieties are grown, but the Spear-mint is most useful, and is increased by division and by cuttings with a bit of root attached in spring or early summer; it will grow in any position, but improves by being transplanted occasionally. Fennel may be increased by seeds and division of the roots, and Winter Marjoram mostly by division. The following also are not unfrequently found in gardens, and are often used to make cooling drinks and for medicinal purposes, viz., Rue, Horehound, Hyssop, Lavender, Balm, Wormwood, and Rosemary, all of which may be increased by cuttings and seeds. Camomile is best propagated by division of the roots, and it should be frequently transplanted in firm land. Amongst Herbs that are highly esteemed for flavouring purposes in large establishments, and that are usually raised from seeds in spring—frequently assisted by artificial heat—may be mentioned Basil (Bush and Sweet), Summer Savory, and Sweet Marjoram. They should be sown, if no hotbed be at hand, the first week in May in light, rich soil in a warm, sunny place, be shaded and kept moist, and the young plants thinned out to 4 in. or 6 in. apart. If a small space in a frame or hotbed can be spared, sow a few seeds in a pot or pan early in April, harden the young plants off, and plant them out in May: by this means the plant will gain an early start. Chervil may be sown thinly in March, again in May, and again in August. All Herbs that require to be dried for winter use should be cut just as they are coming into flower, and when quite dry, they should be tied in small bunches, and hung up in some open, airy building or shed, and when thoroughly dried preserved in wide-mouthed bottles or jars and kept close. Basil and Summer Savory are tender, and should be cut and dried before frost is expected. When Herbs are dried in the sun they dry too rapidly, and lose some of their strength.

Parsley.

Parsley should be sown about the end of February or the beginning of March on well-pulverized land in drills 1 in. deep and 1 ft. apart. It may either form an edging to another crop or occupy a bed or patch by itself. When large enough, thin out the plants to 4 in. apart, planting the thinnings elsewhere if necessary. Another small sowing should be made about the beginning of July, and be thinned out and treated the same as the early-sown lot. Some may think that in small

gardens this late sowing is unnecessary. All I can say is, if I were compelled to depend upon one sowing only, I should sow at midsummer in preference to early in spring, and for this reason: Parsley sown early, and required to be gathered of a moderate size, becomes pretty well exhausted by the following spring, and hardly any precaution will prevent it rushing into flower before the new crop may be considered fit for gathering. But the crop from a midsummer or July sowing comes in at a season when everything is full of growth, and has a chance to get thoroughly established, and this is one advantage in favour of the permanency of the plant. Another and the main reason that may be advanced in favour of this time for sowing is, the plants have not the same tendency to flower and seed the following season. In fact, some plants do not seem disposed to flower, and even those that do, if the flower-stems be cut or pinched off before they make much progress, after a weak effort or two they give up the attempt to produce flower-stems and produce foliage instead in abundance. Any one who has hitherto depended upon the early spring sowing, and has found a difficulty in making the two crops meet, should try this plan. Strictly speaking, Parsley is a biennial, and, like other biennials, if sown after midsummer its season of flowering will be proportionately late; and many plants will miss flowering altogether till the following year, and this is a great advantage when plants are grown for their foliage alone. Some means of sheltering the crop should be devised and prepared before bad weather sets in. Straw hurdles or forked sticks may be placed round the bed on which other pieces are placed, when the whole may be lightly covered with Fern or dry straw.

The Turf-pit.

This is a most desirable structure for cultivators on a small scale to possess, and its erection need not involve a very extravagant outlay; in fact, I have known cottage gardeners who have done all the carpenter's work themselves during their spare time, while any one of course can glaze a frame (as glass can be had of any size) and paint the lights when put together. Those living near a large town can generally purchase machine-prepared sash-bars, rails, &c., at a cheap rate, and it will not require a great amount of skill and ingenuity to saw them into lengths and put them together. Those who have means and are ambitious, may construct their pit walls with bricks, but during the last few years brickwork has advanced considerably in price, and there are after considerations that

should be borne in mind, even by those who can afford the extra cost. In the first place, a brick pit is not so useful for the purpose of wintering half-hardy plants as a turf-pit; a severe frost will penetrate through a 9-in. wall, but I have never known the same thing to happen with a turf or earth-built wall; and, in the second place, if a tenant had to leave his garden or premises, and could not arrange with the incomer, he could remove everything of any value, level down walls, and the place would be restored to its original condition; but brickwork, unless under a special agreement, becomes the property of the landlord: altogether, to a man of limited means, a turf-pit would be far cheaper and more useful than a brick-built one. The first thing to be done is to decide upon the size, and then make arrangements for making the lights, which should be of good 2 in. red deal, and the glass should not be of less weight than 21 oz. to the foot, which will be much warmer, and cheaper, too, in the long run, than thin, light, inferior glass; these, however, are details which every one is competent to decide for himself, as also the size so far as regards length, but it should not be too wide, or the lights will be cumbersome to move; the extreme width (inside measure) should not exceed 6 ft., and perhaps in many cases 5 ft. will be considered sufficient. If the pit be erected on a dry site so as to permit of its being sunk from 6 in. to 12 in. in the ground, the earth taken out perhaps may be used in constructing walls if stiff enough to hold together, as there are comparatively few cottagers who could obtain turves with which to build the walls; and neither are they necessary, for earth walls, from containing no fibre or perishable materials, are more permanent than turf. If the earth be sufficiently adhesive to stand when cut to a straight face, which will be necessary for the inside of the pit, to avoid loss of space the outsides had better be cut sloping to throw off wet and to permit of the banks being turfed over, or a thin coat of asphalt may be used instead if preferred. A good coat of limewash, in which a portion of rough sand has been mixed to thicken it, will give the inside a neat, clean appearance, and at the same time tend to keep the earth from crumbling down. The usual arrangement in buildings of this kind is to have the back wall double the height of the front, as this gives a good fall to carry off the water—always an important consideration in winter in unheated structures, and this of course must be thought of when making the lights so as to have them of sufficient length.

On a very sandy soil, where the walls cannot well be moulded into shape so as to stand alone without inside support, it will be better to line them with builders' slates, which will give the pit a thoroughly strong and neat appearance. Larch poles about 5 in. or 6 in. in diameter sawn into suitable lengths will make capital supports for the framework, and these of course should be let into the ground from 15 in. to 18 in., and have the soil rammed firmly round them. They should be placed 4 ft. apart, so that each pair of posts back and front comes under each rafter; the tops of the posts, when firmly fixed, should be just the height that the walls are intended to be. I have built pits without these posts with the wall-plates simply resting on the earth-walls, but the posts do not add much to the cost, and when the wall-plates are nailed to the tops of the posts, the whole framework is strong and immovable, as if built in brickwork. The posts should stand just flush with the inside, and if it be intended to line the walls with slates to keep the earth from crumbling down, it will be necessary to nail a stout lath to the posts along the bottom, and another along the top of the slates to take the bearing on the inside; and this should be done first, and then the earth-walls can be built firmly against the slates outside. If the back wall be more than one slate high, an extra row of laths will be required. The thickness of the walls may in some measure correspond with their height, and should start with a base considerably broader than their top is intended to be, which will admit of the outside being rounded off and covered with turf. Such a pit will not be unsightly anywhere; and, although in my anxiety to make myself understood, I have been somewhat prolix, yet the actual work of building after the lights are made is trifling. When the pit is finished, put in the bottom a layer of broken stones, and 2 in. of cinder ashes over them, for the double purpose of keeping out the worms and for drainage. The uses to which a pit of this kind, in the hands of enthusiastic, persevering men, can be put are so numerous, they can only be just glanced at here. Almost all half-hardy plants, with careful management to guard against damp settling on them, may be successfully wintered in such a pit, by having warm coverings for the lights during frosty weather. In February it might be filled with fermenting materials and converted into a hot-bed; or, if long enough, a division of rough boards could be made across the centre, and one-half filled with fermenting matter, and the other remain as a cool pit for hardening off

plants before being placed in the open air. Stable litter, leaves, tan, sawdust, or spent Hops from a brewery, each and all may be usefully employed in hotbed making in spring. But where the supply is very limited, it will be better to defer the commencement of propagating and seed-sowing till the middle of March, as then the sun will have more power, and will greatly facilitate the task of keeping the bottom-heat steady. With a pit of this kind 3 ft. deep at back and 18 in. in front, if filled up to within 6 in. or 8 in. of the glass with a mixture of the materials I have named; or the bottom may be filled in with stable manure with 8 in. or 10 in. of sawdust or any similar material, on the tops in which the pots can be plunged. If the stable manure be fresh, it will do no harm, as the depth will not be great and the sawdust will absorb and keep down any destructive gases that may be evolved by fermentation. Of course, as a rule, if large heaps of those substances be used for hotbeds they should first undergo some preliminary mixing and turning to sweeten and drive off some of the rankness, otherwise much mischief may be done. Even Hops, if used in a large bulk and fresh from the brewery, should be applied with caution.

On the other hand, when a considerable proportion of leaves or sawdust can be procured and mixed with the more heating substances, the strong heat from the latter will be neutralized and rendered beneficial without much previous trouble. With a hotbed of this kind ready for use about the middle of March, all kinds of seeds that require a little warmth to start them may be sown in pots and plunged in the sawdust close to the glass. A pinch of Celery may be sown and grown on for early work, or a few Cauliflower seeds, if there be any scarcity of early plants; Tomatoes, also, and a few Cucumber seeds of the Telegraph, or some other good kind, should be forwarded for the purpose of planting in the pit when the propagating is pretty well over. All the preparation necessary would be to turn the heating material over, shake it up, mix it well together, put a barrowful of good turfy loam into the middle of each light, and when the warmth of the bed has penetrated it, the Cucumber plants should be turned out, one or two in the centre of each light. Cucumbers would succeed well in such a pit all the summer, and if well looked after, and near a market, they would go a long way towards paying for the pit. After the Cucumbers were over in autumn, the pit could again be filled with plants requiring protection, either vegetables (such as Cauliflowers or Lettuces) or flowering plants that

might afterwards be useful in brightening up the windows and rooms of the cottage. And whilst briefly noticing this phase of the subject, what a wide and interesting field here lies open to the possessor of such an adjunct to his garden; by means of it how many beautiful annuals might be started in spring either for window or flower-border decoration! Or, if considered only from a utilitarian point of view, what a good use might be made of such a structure for bringing forward Rhubarb, Seakale, early Potatoes, Early Horn Carrots, Radishes, Lettuces, and small salads in early spring! Though all this and much more may be done with only a turf-pit, with the half of it furnishing a hotbed during the spring months, yet it is not advisable, nor indeed is it likely that any one person would attempt so much. Let each one follow his own inclination in the selection of his subjects; but he should only choose a small number, and grow them well. I merely mention a few among the various plants that might be grown in such a place to show the scope there is for individual taste, not with the idea that any one will attempt to do so much in so limited a space. In fact, I may say the greatest evil in the management of small glass structures is attempting too much—forgetting that plants live and breathe, and are as liable to contract disease from overcrowding as human beings are.

Cucumbers.

UNDER GLASS.—I have previously alluded to these in my remarks on turf-pits, but not with sufficient detail. Unless the resources in the way of heating materials are almost unlimited, the end of February or early in March is time enough to begin; and if only two or three plants be required for a small frame or pit, it will be better to buy them, as they can usually be obtained at 1s. each, and be brought home just at the time the bed is ready to receive them. If the plants have to be raised at home, a small seed-bed should be made early in February for raising the young plants, and the making of the main bed must be so timed as to be ready just when the young plants are fit to go out. If a hotbed and frame be used for their culture, the bed should be 4 ft. or 4½ ft. high at back, gradually sloping down to 3 ft. at front. If built on sloping ground it will be an advantage, as then it might be of equal thickness. It should also extend considerably beyond the frame on all sides—1 ft. will not be too much—and there will be no occasion to put linings to it to keep up the heat if the bed be not put up before March. Stable manure

and tree leaves in something like equal proportions are well suited for hotbed-making, and if well mixed together ten days or a fortnight before required for use, no further preparation will be necessary; but if manure fresh from the stable alone be used, a longer preparation will be required, in order to get it into a thoroughly sweet condition before the bed is made up. Should this operation be neglected, the bed will probably be so hot that nothing can be put in it for some time with any chance of success, and then the heat will decline suddenly, and the bed will require to be lined with warm manure to restore it to the requisite temperature. In making up the bed some pains should be taken to apply an equal amount of pressure all over it, so that it may settle evenly, neither making it so solid as to prevent fermentation, nor yet leaving it too loose or open, as in that case the fermentation would be too rapid. A medium degree of firmness is best, and will be found to produce a regular steady heat for the longest period, and this is undoubtedly the most essential point. A small one-light frame, 5 ft. by 3 ft., will be quite large enough for the young plants, and if 6 in. or 8 in. of sawdust or Coconut refuse be placed inside the frame the seeds may be sown without loss of time. There is no better plan than sowing the seeds singly in small pots and stopping them when they have made the second rough leaf, and if the bed be not ready to receive them put them into 48-sized pots rather than allow them to become pot-bound or starved; for checks of this kind are more injurious to early Cucumbers than later ones, when more light and sun-heat are available. When the main bed is ready for the plants, put one good barrowful of soil in the centre of each light: turfy loam slightly enriched is the best. It is a common error to use too rich and too light a soil, the consequence being the filling of the frame with weakly, long-jointed growth, but with a paucity of fruit, and those few will, in all probability, turn yellow and refuse to swell. A very thin stratum of soil is sufficient to start with; 6 in. in depth will in most cases be ample. If there be any danger of the heat rising too much, a layer of turves may be placed under each hill, and 2 in. of soil may be placed over the bed to keep down any noxious gases that may be evolved; but if the bed have been properly made, there should be no danger to apprehend from this or any other source. Although, as I have previously stated, no great depth of soil will be required when the plants are put out, yet as soon as they begin to grow the white roots will come out on the surface and will require sprinklings

of fresh, warm soil, once or twice a week to cover them through the growing season. Later on, when the plants are in full bearing and may perhaps be showing signs of exhaustion, a top-dressing of short, mellow horse-manure will be beneficial. Many small growers allow the shoots to grow too long before stopping; this is a great evil, as it fills the frame with a quantity of useless material, and necessitates severe pruning. There is only room in a frame for a limited number of fully developed leaves; and if too much growth be encouraged it induces a weakly habit, the foliage becomes thin and poor, and ultimately turns yellow and decays. In a well-managed Cucumber frame the knife should not be much required; in fact, only to cut the fruit. The finger and thumb will do all the necessary pruning if used in time. All shoots should be pinched one joint beyond the fruit; to leave more only needlessly crowds the foliage. In the matter of ventilation, so long as the atmosphere is sufficiently charged with moisture, Cucumbers thrive in a close, warm place. As a rule, it is a safe plan to give a little air at the back, early in the morning on bright and warm days, gradually increasing it up to eleven o'clock; and syringing with soft, tepid water about half-past two or three, or later according to the season of the year, and close the lights at the same time. Cucumbers, like all other plants when out of health or in a weakly condition, are liable to be attacked by various insects and fungoid parasites, and the main object—viz., the healthy development of the plants—should be always kept in view, and will be secured by using fresh, sweet, healthy soil, by having everything in and about the frame, pit, or glass, scrupulously clean, by always keeping the growth moderately thin, not allowing the frame to become choked with growth, for this is a sure way of breaking down the constitution of a plant, and bringing it into the condition that renders it liable to become a prey of insect or other pests. There is always a very close relationship between cause and effect. For instance, if red spider attack a plant, it indicates a lack of moisture either in the atmosphere or at the root, or perhaps both, and if attended to in time, by giving plenty of moisture and a close atmosphere for a few days, the enemy will be easily overcome. If the foliage be spotted with mildew, it is generally a sign of stagnation somewhere, either at the root or in the atmosphere, and whilst the necessary remedies are applied—in this case dusting with sulphur—the cause should be removed; and so it is with aphides: if we could go back

to first causes, we should find that their presence was in many cases due to some check sustained by the plant, which had perhaps at the time passed unnoticed, or had been forgotten. There is another disease of a gangrenous character to which Cucumbers are occasionally subject that is probably due to deficient action or circulation of the sap in the plant somehow, the true nature of which is hardly yet understood. Stamping out in this case appears to be the best remedy. Fumigation with Tobacco is the best remedy for green fly and thrips, but it must be done with care, for if the Tobacco be allowed to blaze or flare, some, if not most, of the leaves will be scorched. Fumigation must only be attempted when the foliage is perfectly dry. I need hardly say that mats or warm covering of some kind must be placed over the glass every evening till July, nor yet that all water in all the early stages of growth must be raised to the temperature of the frame before use. One way of managing this will be to keep a pot full in a corner of the frame. I have found no better Cucumber, all things considered, than the Telegraph, either for hotbed or house cultivation.

OUTDOOR CULTURE.—There are various expedients that may be adopted by those whose means are limited to protect outdoor Cucumbers in their early stages, and many handy contrivances suitable for cottagers have been designed within the last few years for the purpose of forwarding early vegetables; and I am quite convinced that a handy man, with plenty of time on his hands in the long winter evenings, could manufacture all he may require in this way. Small, light, square boxes, strongly nailed together, from 18 in. to 2 ft. square, with a couple of squares of glass to slide down to form a roof, will be as efficient, and, if kept painted, would last as long as more expensive substitutes. Frames, made of stout wire, in the shape of hand-lights, and covered with oiled calico, are cheap and useful for placing over the plants on cold nights and days in the early period of their growth, and inverted flower-pots will always be found very useful on an emergency. Where a few barrows full of fresh stable manure or any other material that will produce a little warmth can be had, a start should be made about the end of April or beginning of May. They may either be grown in a continuous ridge or on slight hills about 4 ft. or 5 ft. apart. In the former case open a trench 3 ft. wide, and about 1 ft. deep, wheel the manure in, and cover it evenly with the soil taken from the trench, and, if possible,

bring some fresh mellow loam, in which to sow the seeds. The manure should be made into a moderately firm compact ridge, from 18 in. to 2 ft. thick if possible; 6 in. of soil on the top will be ample, as the young plants can be earthed up afterwards as they make progress. A trial stick should be plunged about 1 ft. in the bed, and as soon as the soil is moderately warm, the seeds may be planted in groups (five or six seeds in a group), so that a hand-light, flower-pot, or whatever protection may be employed, will cover them. The groups or patches of plants may be placed along the top of the ridge 3 ft. or 4 ft. apart. If the seeds all grow, the weakly plants can be uprooted, leaving only two or three at something like equal distances apart. The Cucumber season in the open air is usually a short one, and a great deal of the future success in their development depends upon giving the young plants a fair start, taking care not to coddle and weaken them with too much warmth or too much covering. The covers may be kept on till the young plants push through, and then every fine day afterwards; if opaque covering be used, they should be lifted off, of course placing them on again at night, and keeping them on during cold, windy days. With hand-lights, or any other glazed covers, a little ventilation only will be necessary on bright days to keep the plants in a hardy condition until the time comes for the lights to be removed; this should be done gradually, first tilting up the south side on two bricks, and in the course of a day or two the north side as well, letting the young shoots run outside; and as soon as the weather becomes fairly warm and settled, the covers may be taken away, and the usual routine of stopping, pegging, and regulating the shoots, must be gone through; this, however, is not so important a matter with open-air Cucumbers as with those altogether under glass. The shoots of course should be pegged down to prevent the wind from blowing them about and bruising them. Any strong shoot that shows signs of monopolizing too much of the strength of the plant should be nipped at once at the point; and, during the growing season, if a little fresh loamy soil can be sprinkled over the surface amongst the growing shoots, and round the main stems of the plants, about once a week, it will benefit them considerably. Watering will at all times be an important point in their management; at the commencement of the season the water should have the chill taken off by the addition of a little boiling water, and as the quantity required

will be small, this will not occasion much trouble ; afterwards, when the plants are fully exposed to the air, simply standing the water in the sun for twelve hours will be sufficient. I need not say that liquid manure will be of great service to Cucumber plants when they commence bearing, nor yet that all fruit should be cut when fit for use, unless seeds are required. Wood's Ridge or the Stockwood Ridge will be found as good as any kind. There are certain market growers that by a long course of selection have secured improved strains, but, as a rule, they do not care about parting with seeds ; but what they have done others may do by using the same care in selecting the seed-bearing plants. In favourable situations Ridge Cucumbers may be grown—and, in fact, are grown—without any assistance in the way of bottom-heat beyond that supplied by the sun ; but, as I have already stated, an early start, provided no sacrifice is made of health or vigour, means early production. I know a village in Norfolk where years ago a good many of the inhabitants used to plant their gardens principally with Ridge Cucumbers for the Norwich market, and the profit realized was always in proportion to the attention given, especially towards securing an early, healthy, and vigorous start. I am not much in favour of putting out plants that have been started in a hotbed in pots, though I am free to admit that if the seed be sown in single pots, and plunged in a gentle hotbed almost close to the glass, there is no reason why they should not thrive well, if carefully hardened off and planted out under hand-lights or other protection ; but too often when raised in a hotbed in this way they are huddled up with other plants, and are ultimately turned out with a weakened constitution, and perhaps covered with insects, and half the season is gone before they recover sufficient strength to bear fruit, and should the season turn out unfavourable, many will perish without bearing fruit at all. A crop of Gherkins may be raised for pickling purposes by simply sowing the seeds in patches, five or six in a patch 4 ft. or 5 ft. apart, in well-prepared land early in June, without any special preparation beyond such good culture as is necessary for other crops of vegetables in garden cultivation.

Growing Vegetables for Market.

An industrious man near a town, with a garden large enough to occupy all his spare time may, and, in fact, often does, realize a profit from it beyond supplying his family with fruits and vegetables. Where circumstances permit of this being

done, it will be better to deviate somewhat from the ordinary system of cropping, and to cultivate only those plants that experience has shown can be produced in each particular locality in the greatest perfection. Market gardeners often find it answer their purpose better to concentrate their attention upon one or two special articles, and do this well so as to obtain the command of the market for those particular vegetables or fruits, than to grow an extended selection, acting on the principle that excellence in only a few things is better than mediocrity in a larger number. On warm, dry soils early Potatoes are a paying crop, and they may be cleared off in time to plant the land with Veitch's Autumn Broccoli. The Broccoli would in most cases be off the land by Christmas, which would give plenty of time for ridging it up and preparing it for the Potatoes again; I need hardly add that ground cropped like this must be liberally manured, and the crops must be occasionally changed. Short-top and French Breakfast Radishes are a profitable crop when raised early, and would be cleared in sufficient time for Celery, and this arrangement would make a very good rotation alternately with Potatoes and Autumn Broccoli, as the Celery could be cleared off by Christmas. A good bed of Rhubarb, if well treated and sheltered with litter to encourage early growth, would not cost much to make, and would pay well, while there is always a brisk demand for Seakale in the season, which might profitably be taken advantage of by the enterprising cottager who had a turf-pit or frame, together with the means of raising a little artificial heat. Early Cabbages, to be cleared off by the middle of June, and the land prepared for Turnips immediately thereupon, would be suitable for some soils, and a good patch of Red Cabbages for pickling will usually find a ready sale at a good profit. Onions sown in the autumn tolerably thick, and drawn green when they are a good size towards the end of May, to be followed immediately by Vegetable Marrows, will make a good change with some of the modes of cropping previously named.

There is one point in connection with gardening for profit I think so important that particular stress ought to be laid upon it, viz., as far as possible to secure the best and truest stocks of each particular plant intended to be grown. Any plant of a good true strain will pay better for the space it occupies, granting the outlay is more in the first instance for the seeds, than the inferior quality, even if the latter have equal germinating power; and with this object in view it may

be advisable to devote some attention to the saving of seeds of any really good variety of vegetable, especially as, if this idea be carefully worked out, it may open up another source of profit, cottagers often experiencing a difficulty in securing really good seeds. A careful cottager, who has taken pains in the selection of his plants, will soon obtain a reputation among his neighbours for the excellence of his crops, and may, by saving seeds occasionally, add considerably to his profits. Of course, two of the same family must never be in blossom at the same time, or it will probably result in a crops that will spoil both; this is the main reason why some kinds of vegetables, especially the Brassica family, are so difficult to obtain true to their individual kinds. There are too many varieties (so-called) by half, and every year adds to their number, and renders the confusion still greater. Peas, unless very early or very late, are not as a rule profitable to grow in a small way; French Beans may answer for a change of crops, and the same may be said of Lettuces, and the latter may often be used as a catch crop amongst others; but the main reliance should be placed upon those subjects that are best suited to the soil, and for which the best demand exists in each particular neighbourhood, for the selection of which experience alone will be the surest guide.

There is still another source from which a profit may be realized by those who have some little knowledge of the cultivation of common hardy border flowers, especially those that flower early in spring. There is a large and increasing demand for the decoration of town gardens early in the season by means of Daisies, Wallflowers, Pansies, Pinks, Cloves, Carnations, Sweet Williams, Polyanthuses, common Auriculas, &c. They are all easily increased by division, cuttings, or seeds. They may be grown to a flowering size in one year at a very small cost, and could be lifted with little balls and conveyed anywhere without feeling much check; and if sold at a rate so as to bring them within the means of the very poor, not only would the transaction be profitable in a pecuniary sense, but it might help to brighten the homes of those who have not too many elevating pleasures. I feel convinced that anything that tends to popularize (if I may use the term) and extend the cultivation of flowers must, in the long run, benefit all concerned in their production. I have ever found that when once a beginning is made and interest aroused, even though in a very slight degree, other and choicer varieties are being frequently added to the stock whenever the means will allow.

List of Select Vegetables for the Cottager.

BEANS—Dwarf Fan or Cluster, Early Green Long-pod, Seville Long-pod, Broad Windsor. *French*—Long-pod Negro, Canadian Wonder, Scarlet Runners.

BEE—Henderson's Pine-apple.

BORECOLE—Dwarf Green Curled, Cottagers'.

BROCCOLI—Veitch's Autumn, Snow's Winter, Early Penzance, Cooling's Matchless, Cattell's Eclipse.

BRUSSELS SPROUTS—Imported or any good strain.

CABBAGE—Atkins' Matchless, Cocoa-nut, Enfield Market, Red Dutch. *Savoy*—Dwarf Green Curled, King Koffee.

CARROTS—Early French Horn, James' Intermediate, Improved Altringham.

CAULIFLOWERS—Early London, Walcheren, Veitch's Autumn Giant.

CELERY—Sandringham White, Leicester Red, Sulham Prize Pink.

CRESS—Curled.

CUCUMBER—Telegraph, Wood's Ridge.

LEEK—London Flag, Ayton Castle Giant.

LETTUCES—Paris White Cos, Hicks' Hardy White Cos, Brown Cos, Early Paris Market Cabbage, Tom Thumb.

MUSTARD—White.

ONIONS—White Spanish, James' Long Keeping, Globe, Tripoli, White Lisbon.

PARSLEY—Sutton's Matchless.

PARSNIPS—Hollow-crowned, Student.

PEAS—William the First, Unique, Huntingdonian, Culverwell's Prolific Marrow, Ne Plus Ultra, British Queen.

POTATOES—Ashtop Kidney, Myatt's Prolific, Early Rose, Late Rose, Snowflake, Fenn's Early Market, Fenn's Early White Kidney, Patterson's Victoria.

RADISHES—Wood's Frame or Short-top, French Breakfast.

SPINACH—Prickly, or Flanders.

TURNIPS—Cattell's Silver Ball, Orange Jelly, Veitch's Red Globe.

TOMATOES—Orangefield, Hathaway's Excelsior.

VEGETABLE MARROWS—Long White, Moore's Vegetable Cream.

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There are a number of reasons for this increase. The most important is the rapid increase in the world population, which has risen from 5 billion in 1987 to 6 billion in 1999 (UN 1999).

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